New Orleans Medical

and

Surgical Journal

Vol. 90 NOVEMBER, 1937 No. 5

DIABETES

A SYMPOSIUM*

EXPERIENCES WITH PROTAMINE INSULIN†

I. I. LEMANN, M. D.
NEW ORLEANS

From the very earliest days of the insulin era attempts were made to improve the technic of the new therapy. Exclamations were prompt and loud over the frequent use of the hypodermic needle for the remainder of the life of the patient, for it was foreseen and feared that patients would rebel. All available other routes were therefore tried. Attempts at neutralizing or inhibiting the destructive action of the digestive juices were all in vain, indeed it was shown experimentally that if insulin escaped digestion in the stomach subsequent absorption from the intestine would be unreliable. Insulin was sprayed or dropped into the nose; it was instilled into the rectum; it was rubbed into the skin. All of these methods were proved impractical and useless. Even after the profession became reconciled to the conception that insulin could be given only hypodermatically or intravenously, and after fears had been calmed that patients could not be reconciled to the "hypodermic life," it became evident that improvements in the hypodermic therapy were desirable, and in some cases even imperative.

Insulin when injected by hypodermic begins to have its effect usually within half an hour, and is likely to have its maximum effect in about an hour, and the total effect is usually ended within a period of two to three hours. There are exceptions to this general rule, and there are cases where the effect of insulin is more prolonged and where hypoglycemia occurs many hours after the injection of insulin; in general, however, it may be stated that the effect of insulin is relative explosive, occurring rapidly and disappearing rapidly. With this must be contrasted the effect of endogenous insulin, the production of which seems to be so continuous and so exactly balanced with the needs of the organism that at no time is there a relative want of insulin or a relative excess as would be indicated by hyperglycemia and glycosuria, or on the other hand by hypoglycemia and the usual phenomena accompanying it. It is only in rare cases that a spontaneous hyperinsulinism occurs, and the most aggravated of these occur in patients who are victims of adenomata of the pancreas with resulting hyperactivity of the insulin function. The flow of endogenous insulin, therefore, is continuous and smooth, whereas the effect of exogenous insulin is sudden and jerky. To produce the effect of endogenous insulin, the exogenous insulin would have to be administered in small doses frequently. It is at once apparent that such a plan is impractical. It was, therefore, natural that a method of hypodermic injection be sought which would create a depot from which the insulin would be given off slowly and gradually throughout long periods of hours. The constant difficulty in arranging the timing of insulin injections and of meal hours so as to avoid on the one hand significant glycosuria, and on the other hand hypoglycemic reactions, was and is the stimulus to the discovery of such a method. No one who has witnessed the dread of mothers that their children might have (as

†From the Department of Medicine, School of Medicine, Tulane University and The Medical Service, Touro Infirmary.

*The following four papers were presented as a symposium before the Orleans Parish Medical Society April 12, 1937.

unfortunately they do have) insulin reactions in their sleep can fail to be impressed that great as the advantages of insulin are there have remained undoubted difficulties.

EFFECTS OF PROTAMINE INSULIN

In January 1936, Hagedorn and his associates[1] announced that after a long series of experiments (vaguely reminiscent of the famous series of 606 leading up to the announcement of arsphenamine by Erhlich) they had succeeded in producing a modification of insulin which complied with the requirements I have outlined in the previous paragraph. The product was the result of a combination of insulin with protamine derived from the sperm of certain fish. During the course of the past year investigations, particularly in this country, have developed a still further improvement by the addition of zinc to the protamine insulinate. I have no time, nor is this the place, for a survey of the experimental data already published in the literature. I refer briefly to only a few of the most fundamental: "The failure to obtain delayed reaction after the intravenous administration of protamine insulin is further evidence that the prolonged activity of the compound which follows subcutaneous injection depends upon its delayed absorption."[2] Ocular proof of the slow absorption of protamine insulin was given by Beecher and Krogh.[3] By aid of a Sanderson Clark chamber inserted in the rabbit's ear they studied the rate and method of absorption of insulin and protamine insulinate. Ordinary insulin precipitated at its iso-electric point disappeared from the lymphatics in forty-five minutes. Protamine insulinate disappeared from the lymphatics in about five hours. In their communication Hagedorn and his associates[1] proposed that protamine be given at night and ordinary insulin in the morning, and their first clinical trials were based upon this arrangement. In the same number of the Journal of the American Medical Association appeared a communication from the Joslin Clinic[4] providing confirmatory evidence of the claims of Hagedorn. Since then further clinical trials have demonstrated that other arrangements of protamine insulin and regular insulin may be more advantageous. Some patients, it has been found, can be adequately treated by the administration of a single dose of protamine insulin once a day. In others this single dose must be supplemented by an injection of regular insulin at the same time but at another site. This supplementary dose of regular insulin takes care of the hyperglycemia which may exist for a brief period of the twenty-four hours through which the single injection of protamine does not extend. In other words the protamine insulin acts slowly and while we are waiting for this action the regular insulin has its prompt and transitory effect. It has been repeatedly reported that the effect of protamine insulin may be extended over twenty odd hours, and in some cases there is evidence that it may extend over several days. In another paper Joslin and his associates[5] reported that they had seen protamine insulin act so slowly that the full influence did not become manifest for five to six days in a patient who had been put on the new preparation. They had given as much as 120 units of protamine insulin with 120 units of the old insulin simultaneously to a woman aged 36, who for the previous six months had required 500 units of the old insulin in four doses daily.

PERSONAL EXPERIENCES

I wish now to report upon my experience with protamine insulin* in twenty-six patients. Their ages ranged from three to sixty-eight; first decade two patients, second decade seven patients, third decade four patients, fourth decade seven patients, fifth decade two patients, sixth decade three patients, and the seventh decade one patient. The diet for the adult patients ranged from 120-200 carbohydrate, 50-80 protein and 80-100 fat. My usual custom has been to divide the carbohydrate one third, for each of the three meals. One child, aged three years, took a diet averaging 110-120 carbohydrate, 40 protein and 60 fat. The other child took 140 carbohydrate, 60 protein and 90 fat. My experience has been eminently satisfactory and most promising. All of the patients have remained on the preparation with the exception of four. Of these one, a child aged seven, was

*I wish to express my appreciation to Eli Lilly and Company, E. R. Squibb & Sons, and Sharp & Dohme for supplying me with the protamine insulin for clinical trial during 1936.

taken to his home a hundred miles away before the dose could be adjusted properly. Two adolescents were returned to ordinary insulin at a time when I had an inadequate supply of protamine insulin. One adult patient refused to give his cooperation in the period of adjustment of the new dosage; for this reason no prolonged attempt was made to maintain him on protamine insulin. In all but three patients I have been able to reduce the number of injections from two or three to one a day. It is true that of those who receive protamine once a day, eight take both protamine insulin and regular insulin simultaneously. I wish to emphasize that these simultaneous injections are given at different sites and with different syringes. If regular insulin is mixed with protamine insulin the effect of the combination is that of protamine insulin only, and not at all that of regular insulin. It is my custom in shifting from old insulin to protamine insulin to give as a single injection of protamine insulin from two-thirds to three-fourths of the total amount of insulin previously administered in the two, three of four injections in the twenty-four hours.

My experience has taught me to observe several precautions. The first of these is that, in changing from regular insulin to protamine insulin, some regular insulin should be supplied at least the first day. It must be remembered that the effect of protamine insulin is slow and if the total amount of insulin injected in a day be supplanted by a single dose of protamine insulin administered in the morning, the patient will go for at least half a day or perhaps longer without insulin effect. This is equivalent to the sudden withdrawal of insulin and is likely to precipitate ketosis. I had one such experience: A patient who had been taking 48 units of regular insulin in two doses was put on 32 units of protamine at one injection in the morning. By late afternoon she had epigastric pain and was vomiting. The urine contained sugar, acetone and diacetic acid. The prompt administration of regular insulin relieved her symptoms and within a short time she was quite all right. I believe, therefore, that if the total amount of insulin throughout the day is more than 40 units, on the first day order in addition to the protamine insulin a supplementary dose of regular insulin at the same time, or be prepared to give regular insulin once or twice later in the day, depending upon the appearance of sugar and ketone bodies in the urine. The next caution is one I have already alluded to, namely that the full effect of the preparation may not be obtained for a number of days after its use has been instituted.

The same patient who developed ketosis so promptly after the inauguration of the protamine insulin therapy was sent home after two weeks' observation with instructions to take protamine insulin, 32 units in the morning and 42 in the evening. On this I was able to keep her urine sugar free, and the blood sugars were: February 22, 1937, 2:30 p. m. 266 mg. per 100 c.c.; 9:15 p. m. 220 mg. per 100 c.c.; February 23, 1937, 8 a.m., 89 mg. per 100 c.c.; February 25, 1937, 2 p. m. 200 mg. per 100 c.c. After she was at home for a week (some 200 miles away) her husband telephoned me that she had had severe hypoglycemic reactions and that it had been necessary to administer glucose intravenously in order to bring her out of coma. It has been necessary subsequently to reduce her insulin to 28 units of protamine plus 10 units of regular insulin administered simultaneously in the morning. With this arrangement the urine remains sugar free throughout the twenty-four hours. This insulin is to be contrasted with the total amount of old insulin that this patient took formerly, namely 48 units in two doses. A third precaution I would advise is that the patient should take a bedtime repast of 15-20 grams of carbohydrate (a glass of milk with two or three crackers, for example). This is to buffer the blood sugar reducing action of the protamine insulin and to avoid the hpyoglycemic reactions that have sometimes occurred in the hours between midnight and morning, some twenty hours after the administration of the protamine insulin.

The most striking example of the value of the new insulin I have had is in the case of G. S., female, aged 19, under observation since the age of 12. Originally she had been an underfed, unhappy child with double cataracts. She

is now a well developed, happy, self-supporting young woman, rendered so by the successful operations on her eyes and the constant use of insulin. She had had many difficulties on regular insulin, having had to be admitted several times for diabetic coma, and many times for severe insulin reactions. In spite of repeated hospitalization for weeks and even months at a time, I had never found it possible to regulate her insulin so as to bring her fasting blood sugar to a reasonable limit without throwing her into insulin shock some other time of the day. Her fasting blood sugar had persistently been over 300 and sometimes as much as 400 mg. per 100 c.c. I had tried three and four doses of insulin a day, and had distributed it in all kinds of arrangements, all in vain. This patient, therefore, was an ideal one for protamine insulin. At the outset it was necessary to give her as much as 120 units of protamine in two doses daily. She is now taking only 30 units of protamine once a day.

During the six years Mrs. H., aged 32, had been under my care I had had great difficulty in adjusting the insulin dose. Whenever the dose was increased to insure freedom from glycosuria throughout the day, the patient would have insulin reactions. A curious observation was that for the past year she had had recurrent diarrheas for which no cause could be found in spite of repeated searches for ameba, parasites and B. dysenteriae including cultural methods. Gastric analysis, proctoscopy, and roentgen ray examination yielded no information. The patient reported the observation that whenever insulin was pushed to the point of insulin reaction her diarrhea would be checked. It was all the more desirable, therefore, that an approximately normal blood sugar and freedom from glycosuria be obtained. With protamine insulin it has been possible to control the glycosuria as it had never been previously done with ordinary insulin. There are no insulin reactions and since the glycosuria has been controlled the diarrhea has ceased and has not returned.

The reduction of the number of injections per day, therefore, does not represent the total improvement offered by protamine insulin over the old insulin. The more continuous steady absorption of the new preparation makes insulin reactions less probable. It also avoids the "wastage" of insulin to which other observers have referred, namely the administration of insulin in periods where it is not needed and where some of the insulin seems to be lost by being excreted through the urine.

SUMMARY

Enthusiastic as I am about the new preparation and hopeful as I am about further improvements in therapy along this line, I must not fail to say that the arrival of protamine insulin has not simplified the steps necessary to be taken to establish the proper dose for each patient. The method is still one of trial and error just as it has hitherto been for the old insulin. Fortunately some of the difficulties of technic of the administration such as the mixing of the protamine with the insulin which was necessary at first have now been done away with. The material as now sold comes already mixed, and ready to be used, and the technic is just as simple as that of old insulin. Some of my patients have complained that the protamine insulin injections have left painful lumps. Others, the majority, have had absolutely no complaints. I trust that further improvements will prevent the painful areas.

Finally, it may be asked can protamine insulin be used in the treatment of diabetic coma? It has been so used in connection with old insulin. In the present state of our knowledge I should prefer to rely upon the prompter action of old.

REFERENCES

1. Hagedorn, H. C., Jensen, B. N., Krarup, N. B., and Wodstrup, I.: Protamine insulinate, J.A.M.A., 106:177, 1936.

2. Longwell, B. B., and Ravin, A.: The effect of intravenous administration of protamine insulin, Am. J. Physiol., 117:453, 1936.

3. Beecher, H. K., and Krogh, A.: Microscopic observation of the absorption of insulin and protamine insulinate, Nature, 137:458, 1936.

4. Root, H. F., White, P., Marble, A., and Stotz, E. H.: Clinical experience with protamine insulinate, J.A.M.A., 106:180, 1936.

5. Joslin, E. P., Root, H. F., Marble, A., White, P.: Joslin, A. P., and Lynch, G. W.: Protamine insulin, New Eng. J. Med., 214:1079, 1936.

THE PRINCIPLES OF SURGERY ON DIABETIC PATIENTS†

URBAN MAES, M. D.
NEW ORLEANS

At first glance it seems distinctly on the gloomy side to say that insulin has made it possible for the diabetic patient to share with those not so afflicted all the ills to which flesh is heir. Actually, it is an encouraging reflection. That the diabetic is now subject to all the changes and chances of this mortal life, including, from our special standpoint, all the surgical contingencies, is definite proof of how greatly his span of life has increased during the insulin era. Indeed, to paraphrase Sir William Osler, if the diabetic can be taught to "make friends with his ailment," he may, paradoxically, live to a riper old age than his non-diabetic brother, whose blithe disregard of all the rules of hygienic living often sends him to an early grave.

Lord Moynihan's statement that no patient should be permitted to die of one disease merely because he happens to have another disease can be applied with peculiar propriety to the diabetic who develops a surgical condition, as, according to Joslin, one in every two or three is now doing. Since the advent of insulin the diabetic need not be denied surgical relief for any surgical condition, be it urgent, essential or purely elective. That does not mean, however, that there is the slightest justification for regarding lightly any surgery practiced upon him, even the so-called minor surgery. The first principle of safe surgery in these circumstances is the realization that the patient is always a potentially if not an actually poor risk, that his margin of safety is always slight.

PROBLEMS OF THE DIABETIC

Even if the diabetic state be under the proper control, which it very often is not, the diabetic presents certain peculiar problems. For one thing, he is quite as prone to delay seeking medical consultation when he is ill as is his normal brother, the difference being that delay in the diabetic, particularly when infection enters the picture, has far more serious consequences. Pain, vomiting, diarrhea, starvation, dehydration, fever and similar accompaniments of surgical states aggravate his chronic metabolic disturbance. Because of his subnormal resistance any superimposed strain is *per se* a serious strain. If he is advanced in years, as diabetics today very often are, he may be the subject of cardiovascular, cardiorenal or other degenerative diseases. Arteriosclerosis is practically always present; Eliason says that every diabetic develops it by the fourth decade, others say that every diabetic develops it within five years of the onset of his diabetes. Vascular accidents, therefore, are to be expected, and these patients always show, in addition, a definite predisposition to hypostatic pneumonia. Furthermore, as Joslin points out, there is a growing realization that Claude Bernard was right when he emphasized the prominent rôle of the liver in diabetes, a serious consideration in view of the increasing realization that all surgery implies more or less strain upon the liver. It is obvious, therefore, that the diabetic, partly because of his organic disease and its possible complications, and partly because of the effect of his surgical state on his organic disease, is a potentially poor risk for surgery, however well he may be prepared, and an exceedingly poor risk if his preparation be not adequate.

If the diabetic be properly prepared and wisely handled, the results of surgical procedures are usually comparable to those secured for the same conditions in non-diabetic patients. But if delay be a factor, and particularly if infection be present, the situation is very different. When infection is present, as Foster says, the road to coma lies open. It does. Within a year I saw three patients die on my own service from infections which were originally slight in themselves but for which treatment was too long delayed. Infection disrupts further an already disturbed metabolism, in its presence insulin loses much of its effectiveness, and a vicious circle is set up which must be promptly interrupted if the patient is to be saved.

COOPERATION BETWEEN INTERNIST AND SURGEON

I do not know who made the remark that medicine is not a game of solitaire, but it is another aphorism peculiarly appropriate to the

†From the Department of Surgery of the School of Medicine of Louisiana State University.

surgical diabetic. Both internist and surgeon must run the race together if the patient's best interests are to be served. Above all, they must realize the dual risks of delay and infection. When the diabetic develops a surgical condition, no quarter is given, no odds are allowed, because he has diabetes. In its presence appendicitis just as surely goes on to rupture and peritonitis, hyperthyroidism just as swiftly burns up the tissues, carcinoma kills just as inevitably and as mercilessly as if the diabetes were not there. The only difference is that the process is practically always quicker; that fact the internist and the surgeon must never forget.

Furthermore, the internist must be exceedingly careful not to permit his patient to develop these or any other surgical conditions, and even to die of them, without noticing that they have developed. That is no rash overstatement. I have seen such errors revealed only at autopsy. It is sadly true that perhaps the most unsafe place in the world to develop one disease is in the hospital under treatment for another, and I fear that the same state of affairs holds for the ambulatory patient under the care of a physician for some chronic disease.

The actual preparation of the diabetic for surgery is entirely the internist's business. It is no casual performance. It requires skill and experience. It is almost mathematical in its exactness. This is one time when laboratory findings are more important than clinical observation. The preparation must be entirely individual. It must vary with the severity of the constitutional disease, with the duration and severity of the surgical state, with the patient's age and general condition, and with the length of time available for preparation. The demands of emergency and of elective surgery differ widely, but in general it may be said that the purpose of all preparation is to reduce the blood sugar to an approximately normal level and to keep the urine entirely free of sugar and ketone bodies. The amount of insulin and when it should be given, the character and amount of the diet, are left to the internist, who frequently must walk warily between acidosis and its risks on the one hand and hypoglycemia and insulin shock on the other. Rudy's paper calling attention to these latter dangers, especially in the aged, is timely.

In addition to such special preparation, the diabetic needs fluid to maintain a proper fluid balance, and in view of the existing liver damage because of his disease and the additional liver trauma to be inflicted by operation, it is frequently imperative that his storage of glycogen be increased. Glucose may safely be administered for this purpose at the discretion of the surgeon, who can rely upon his medical confrère to buffer it properly with insulin.

It seems scarcely necessary to point out that since the diabetic is always potentially below par, the operative act should produce as slight a degree of shock and as little loss of blood as is possible. Unnecessary trauma must also be avoided, in view of the susceptibility to infection of the tissues. For that reason local analgesia, in my opinion, is usually contraindicated. Clinical and experimental evidence has proved the unwisdom of ether for the diabetic except in extraordinarily skilful hands. Spinal analgesia has a wide field, but should be used with extreme caution in aged, debilitated, shocked and hypotensive patients. These contraindications are now quite generally accepted, and it is realized, too, that pulmonary complications are at least as frequent after this type of anesthesia as after the inhalation varieties. My personal preference is for ethylene or cyclopropane, both of which permit a high admixture of oxygen.

The properly supervised diabetic should present no difficulties during convalescence from the standpoint of his organic disease. The cooperation of the internist is necessary as long as the patient is in the hospital, and that should be until he is well. The healing process is notoriously slow in diabetics and partially healed wounds are an easy prey to infection. Furthermore a lapse from a strict regimen of diet and insulin may have serious and even fatal consequences. Careful supervision until complete recovery is the only safe plan.

ACUTE ABDOMINAL CONDITIONS

Acute abdominal conditions in the diabetic must be distinguished from the type of dia-

betic acidosis described by Joslin, Root and White, Beardwood and Bothe, and others. This type of acidosis, unlike true diabetic coma, frequently bears all the hallmarks of acute abdominal disease, including fever and leukocytosis. This was true in 96 of 136 such cases recently reported by Beardwood and Bothe. These authors emphasize a fact which deserves reiteration, that acute abdominal disease in the diabetic often presents such slight local and constitutional reactions that it may be entirely overlooked. It is a delicate matter to decide whether one is dealing with such conditions as acute appendicitis, acute pancreatitis or intestinal obstruction, in which surgery is lifesaving, or with a false emergency which is really diabetic acidosis and in which exploration will simply add to the risk. There is no doubt, on the other hand, that it is possible to overlook abdominal disease under these circumstances. Root has recently reported 26 cases of diabetic coma in which autopsy revealed four cases of unsuspected acute pancreatitis, an experience which leads him to say that this disease should be considered as a possibility in any case of diabetic coma which does not respond promptly to the standard treatment.

The possibility of pancreatic involvement, for that matter, is an excellent reason for resorting to surgery for gallbladder disease associated with or superimposed upon diabetes. The coincidence is rather frequent. McKittrick and Root report it in nearly half of 49 autopsies on diabetics over twenty-five years of age, and stress the necessity for prompt surgery for the biliary disease if for no other reason than to eliminate its deleterious effect on the diabetic condition.

GANGRENE

Gangrene is the most frequent and most fatal complication of diabetes. It frequently presents problems of extreme difficulty, more frequently, of course, in a public hospital than in private practice, where prophylaxis is more generally the rule. Whether to be conservative at all, how long to be conservative, when to amputate, where to amputate, how to amputate, these are questions which cannot be settled by dogmatic generalizations. They are the problems of the individual patient. In addition to the extent of the local necrosis and the ever-present possibility of infection in the characteristically moist gangrene of diabetes, one must consider also the patient's age and his social status. One must remember how quickly this type of gangrene leads to septicemia. One must remember that today gangrene tends to occur at a considerably more advanced age than it once did, and must be prepared to cope with the complications which the mere age of the subject introduces. The instinct to be conservative, to avoid mutilating procedures, is highly commendable, but, as Veal has pointed out in his study of gangrene in Charity Hospital, it is the obstinately conservative surgeon who adds to the mortality of diabetic gangrene, adds to it just as does the ignorant patient who delays presenting himself for treatment or who refuses surgery when it is offered to him. The indications for amputation have been exceedingly well presented by McKittrick and Root, McNealy and others, and I shall merely say here that my preference is for amputation at the site of election whenever that is possible, and for the Kocher or en saucisson technic.

DIABETES WITH OTHER DISEASES

Diabetic patients are peculiarly susceptible to boils, carbuncles, furunculosis and similiar infections which would be of small consequence in normal individuals but which are potentially very serious in them because of their violent reaction to infection. Careful supervision of the diabetic state and prompt treatment of the local lesion are essential, though that treatment need not necessarily be surgical.

The relationship between diabetes and hyperthyroidism may be open to debate, but of the deleterious effect of the coincidence there can be no possible doubt. Both are diseases in which disturbed metabolism is the underlying pathologic change. The diet of the patient with diabetes can be controlled, but the patient with hyperthyroidism, as Joslin vividly says, indulges in endogenous overeating twenty-four hours a day. The astonishing improvement in the diabetes which often follows thyroidectomy is convincing proof of the effect of the one disease upon the other, and whatever one may feel about the nonsurgical treatment of hyperthyroidism, these are not the circumstances in which to practice such theories. The hepatic

damage which is now known to exist in both these conditions is an additional reason for urging prompt treatment of the thyroid condition.

The diabetic person who lives to middle age or beyond thus lives into the so-called cancer age, and while statistics on this subject are few, there seems no doubt that he is peculiarly likely to develop carcinoma of the pancreas. Conlin found this type of malignancy, for instance, in four of 11 cases of cancer, and McKittrick and Root found it in 12 of 37 cases, the diabetes preceding the cancer by some 3.7 years. The incidence of all varieties of cancer in the diabetic patient is increasing, according to Joslin, which makes the duty of his physician clear. The diabetic must not be permitted to die of malignant disease while his physician looks on helplessly, either because he is so concerned with the diabetes that he has overlooked the malignancy, or because he is fearful of the combination of surgery and diabetes.

SUMMARY

It might be well to quote at the end of this paper as at the beginning Lord Moynihan's aphorism that the patient with one disease must not be permitted to die of another merely because of the coincidence.

BIBLIOGRAPHY

Beardwood, J. T.: The abdominal symptomatology of diabetic acidosis, J. A. M. A., 105:1168, 1935.

Bothe, F. A., and Beardwood, J. T. Jr.: The evaluation of abdominal symptoms in the diabetic, Ann. Surg., 105:516, 1937.

Conlin, F.: Statistical study of 616 cases of diabetes, Nebraska M. J. 18:286, 1933.

Foster, N. B.: Some surgical aspects of diabetes, J. A. M. A., 84:572, 1925.

Joslin, E. P., and Lahey, F. H.: Diabetes and hyperthyroidism, Ann. Surg., 100:629, 1934.

Levin, C. M., and Dealy, F. N.: The surgical diabetic, Ann. Surg., 102:1029, 1935.

Maes, U.: The surgery of diabetes as it concerns gangrene of the lower extremities and carbuncles, Surg. Gynec. Obst., 51:700, 1930.

McKittrick, L. S., and Root, H. F.: Diabetic Surgery. Lea and Febiger, Philadelphia, 1928.

McNealy, R. W., and Shapiro, P. F.: Vascular disease of the lower extremities, Surg. Gynec. Obst., 59:650, 1934.

Meyer, E. L.: Function of liver in diabetes mellitus, Arch. Int. Med., 47:182, 1931.

Root, H. F.: Diabetic coma and acute pancreatitis with fatty livers, J. A. M. A., 108:777, 1937.

Rudy, A.: Hazards in treatment of elderly diabetic with report of cases. Endocrinology, 17:309, 1933.

Veal, J. R., and McFetridge, E. M.: The surgery of gangrene of the extremities, Surg. Gynec. Obst., 60:840, 1935.

DIABETES IN CHILDHOOD

CHARLES JAMES BLOOM, M. D.
NEW ORLEANS

The twentieth century has brought to the juvenile diabetic his first ray of hope for an increased life expectancy. Insulin, the therapeutic savior of our era, has already proved efficacious in prolonging the lives of children afflicted with pancreatic glycosuria. Prior to the discovery of insulin, the mortality in childhood approached 100 per cent while, today, after fifteen years of usage, death from diabetes mellitus in the juvenile has been reduced to a negligible per cent. Historically, there is no recorded description of this disease until the first century. From this time on, interesting and outstanding accomplishments have been reported and gradually there has been added to our knowledge observations and discoveries which, in reality, have paved the way for our present-day acceptation of the pathology and treatment of this disease. One cannot forego the privilege of mentioning briefly those who have contributed to furthering the knowledge of diabetes mellitus through the many centuries.

HISTORICAL

In Chinese literature there is mention of this disease 600 years B.C. and the saccharine nature of the diabetic urine was known to the Hindus. Polyuria, as a symptom, was noted "in Papyrus Ebers which was already old in the time of Moses." In the Old Testament and the Talmud, Jews were accredited with having boils, carbuncles, and bulimia which today lead us to infer that they, like the Hindus, were prone to this disease. Symptomatology was found in the writings of Celsus (25 A.D.).

Areteus (30 A.D.) named the disease. Paracelsus (1493) evaporated the urine of a diabetic patient, which yielded four ounces of salt. Chyluria was recognized in the 16th century by Dodonaeus; the hereditary character by Morton in 1696. During this period the sweet taste of the urine and later not only of the urine but also of the blood serum

was discovered by Thomas Willis and Dobson, respectively; lipemia was noted by Johann Baptista van Helmont. Time marches on—and the 18th century finds Ambrosiani and Maitland isolating the fermentable sugar from the blood. In 1788, an outstanding contribution was made by Cawley in associating pancreatic pathology with diabetes mellitus, in variance with Galen (130 A.D.) who attributed it to a dysfunction of the kidneys. Shortly afterward, the dangers of the carbohydrate diet were described by Rollo (1796). The 19th century witnessed the actual identification of glucose by Chevreul (1815); that starch digestion normally yielded sugar (Tiedemann and Gmelin, 1827); polarimetric determination (Biot); qualitative test (Trommer) as well as that of Fehling, and the description of diabetic coma (Kussmaul, 1847); all antedated 1860. It was during this period also that Claude Bernard demonstrated experimentally the relation of liver to sugar formation, initiating, as it were, the modern physiologic conception of the disease.

The contributions of Magnus-Levy, Naunyn, von Noorden, Allen, Joslin, and Zuelzer; of Banting, cooperating with Macleod, Best and Collip and, finally, of Hagedorn partially completes the roll of honor of those who have made present day treatment of diabetes possible.

Joslin has seen fit to divide the modern conception of diabetes into eras. Through modesty, perhaps, he has withheld placing his name where it justly belongs. Therefore, his original table has been somewhat modified:

The Ancient Era	600 B. C.	—	1897
The Naunyn Era	1897	—	1914
The Allen-Joslin Era	1914	—	1922
The Banting Era	1922	—	1925 (early)
	1926	—	1929 (middle)
	1930	—	1935 (later)
The Hagedorn Era	1935	—	

PRE-INSULIN MANAGEMENT

From 1900 to 1914 the influence of the Straussburg school and later of von Noorden was still dominant though somewhat more scientific. In many instances the patients became sugar-free. This was accomplished primarily by feeding a diet high in fat, as much as 200 grams being administered daily to strengthen the patient. Necessarily, many cases would ultimately reveal a failing tolerance and death would result from coma. Alkalies were given "ad nauseam." Then, the Allen diet, 1914-1922, came into vogue, which consisted "of fasting to produce sugar-freedom and undernutrition to maintain it." The Joslin modification followed, namely, the elimination of fat; the gradual decrease in protein and the slow reduction of carbohydrate. "It was not necessary to fast the patient."The management of the diabetic child first received attention in 1903 (Frolich). His method and Langstein's (1905) management of juvenile diabetes were according to the methods of von Noorden. Kleinschmidt (1916) modified the above by restricting the protein and advocating vegetable days and alkalies for acidosis. "From 1914 to 1922, the under-nutrition methods of Allen and Joslin were employed in children."

THE INSULIN ERA

Zuelzer (1908) made an unsuccessful attempt to isolate insulin from extracts of the pancreas.

"Insulin, the hormone of the pancreas which regulates carbohydrate metabolism was discovered in 1921 by F. G. Banting with the assistance of C. H. Best while working under the direction of Professor J. J. R. Macleod in the Physiological Laboratory of the University of Toronto. . . . . Insulin is a hydroscopic powder, soluble in water and 80 per cent alcohol, but insoluble in 92 per cent alcohol and acetone, and precipitated by half saturation with ammonium sulphate, by kaolin, charcoal, and ammonium sulphate. Its solubility depends largely on the hydrogen-ion concentration. The iso-electric point of precipitation lies between 5.5 and 6.

"Insulin is a protein, according to Dudley (1923), and he is led to this conclusion because of: (1) its ready absorption, (2) its

failure to pass through an ultra filter, and (3) its rapid digestion by trypsin and particularly by pepsin . . . . Insulin will keep for a year or more even in warm climate . . ."

The first patient to receive insulin at the hands of Banting and Best was on January 10, 1922.

White (1936), reviewing the findings of Hagedorn relative to protamine insulinate, states: "The new protamine insulin or Danish insulin retard, however, will revolutionize therapy, and the severe diabetic will profit most. After three years of the disease, all youthful and severe cases show an elevated fasting blood sugar well over 300 milligrams. From the third year of duration on the blood sugar becomes stabilized. There is no tendency "for increasing severity of diabetes indicated by increasing fasting hyperglycemia. For several years Hagedorn has worked upon this hypothesis. If insulin is combined with a base, injected as a suspension the minimum solubility of which occurs at the hydrogen-ion concentration of body fluid, the precipitate will be slowly broken down and active insulin released in small quantities over a long period of time, more nearly simulating the insular secretory function of the normal pancreas. In order, he tried the tri- bi-, and monoprotamines, and found that a new one, a monoprotamine which has never been described in the literature, derived from the ripe sperm of the American Salmo iridus, provided the minimum solubility at the desired hydrogen-ion concentration, 7.3 compared with 7.7 of our regular insulin hydrochloride.

"For two years Hagedorn has been using this in Copenhagen. Our first experimental lot came to us in July, 1935, and we had an opportunity to use it with 19 patients. Our own work has been merely to confirm the results reported by Hagedorn. This insulin remains in the body nearly twice as long as ordinary insulin. The drop in blood sugar is very gradual, and insulin reactions are reduced to the minimum. Protamine insulin will not replace the regular insulin. Because of its slow absorption it is not of great value in crises such as diabetic coma or infections. It may not replace regular insulin entirely even in the treatment of severe diabetes. At first, the best results were obtained by using the regular insulin in the morning, when we want rapid action, and insulin retard in the evening. By so doing there is just a gradual fall of blood sugar and the patient wakens with a normal fasting blood sugar. More recent experiments indicate that complete replacement is possible . . . . . ".

JUVENILE INCIDENCE

Congenital diabetes is extremely rare but cases, one by Ambard and co-workers, (1925) and the second by Feldmann (1928), have been reported. Diabetes in childhood prior to the twentieth century was seemingly either undiagnosed or else constituted but a small per cent of the number of diabetic cases reported. This is exhibited in the following table:

	Number of Cases	Year
Dewees	3 under 15 mos.	1826
Condie	4 under 14 years	1844
Hauner	1	1850
Kitselle	1 infant few days after birth	1852
Kutz	Reviewed literature 111 cases	1878
Stern	Reported 75 additional	1890
Knox	7 under 1 year	1852-1896
Bell	1 infant 3 months	1896
Holt	1360 by Pavy-only 8 under 10 years 700 by Prout-only 1 under 10 years 380 by Meyer-only 1 under 10	1898

Fletcher (1907) in 506 cases reported 2.5 per cent were in children under 12 years. Von Noorden (1912) found that from 0.5 to 1 per cent constituted the number of children who had diabetes mellitus in the first 10 years of their life and that 2.5 per cent of his 2,000 patients were juveniles.

Garrod, Batten and Thursfield (1913) conclude that children below 11 years of age constitute 1 per cent of diabetic patients.

Today, in the United States, it is esti-

mated that juvenile diabetes exists in the proportion of one child in each 8,000 children and that there are actually 25,000 who either have diabetes or are pre-diabetic. Whether there is a direct relationship of sugar consumption to diabetes is still undecided, though it is significant that sugar consumption has increased proportionately to the incidence of pancreatic glycosuria in children. In 1926 the average per capita consumption was 109.3 pounds a year; in 1930, 99.3 pounds a year or 124 grams a day. "This means that 18 per cent of the daily menu of the American is made up of sugar. The average yearly consumption of candy in 1929 was 12.98 pounds, or one pound a month," according to Willet and Gray (1930), as reported by White, 1936.

ETIOLOGY

The sex incidence finds a slightly larger distribution in the male than in the female, and children residing in cities constitute a much larger per cent than those living in rural communities.

The racial distribution is still one of dispute. White (1932) reports 8 per cent Jewish children as compared with 92 per cent Gentile. Abt (1923) has treated from seven to eight non-Jewish children as compared to one Jewish child. Joslin (1928) stated that Hebrew children constituted 6.1 per cent of his cases. In my own practice of eight cases that are to be reported, seven were Gentiles and one descended from one fourth Jewish heritage. On the other hand, it is conceded that the susceptibility to this disease among Jews is greater at all ages—Foster (1915); Wallach (1893); Williamson (1898); von Noorden (1912); Joslin (1917). Wallach (1893) of Frankfurt, Germany, found that the proportion of deaths from diabetes to the total deaths was six times greater among the Jews than among the other inhabitants.

Opinions the world over favor well-to-do children as being more prone to diabetes in contrast to those in moderate circumstances. Unquestionably, rich and better food, limited exercise, and greater nervous tension have played their part.

Trauma, such as operative obstetric interference, where injuries affect the head and abdomen primarily, can be accepted as a possible factor. Higgins and Ogden (1895); Abt (1911); Hoeninger (1911); have found evidences to substantiate the belief that trauma can produce either a transitory glycosuria or diabetes in children. In the child, the involvement of the ductless gland, acute infection, syphilis, dietetic excesses and obesity have had no definite substantiation as being directly responsible for the onset of diabetes mellitus. Ladd (1926) associated six of his 35 juvenile diabetics following an acute infection.

White (1936) has rightly stated that the hereditary nature of diabetes has yet to be proved. Time does not permit discussing the various methods of investigation in attempting to prove inheritance in its relation to diabetes. "The actual evidence in favor of the theory that the potentiality for developing diabetes is inherited rests primarily with four facts: (1) The almost simultaneous occurrence of diabetes in similar twin mates; (2) the greater incidence of diabetes in the members of a diabetic than in a control family; (3) the demonstration of Mendelian recessive ratios in a large series of cases selected at random, and (4) in presumably latent cases."

PHYSICAL FACTORS

By way of digression, the diabetic child's physical makeup should be known and appreciated. The muscular efficiency of those afflicted with disease is appreciably less than normal but can be made to approach normalcy by proper diet, insulin and physical therapy (Fitz and Murphy 1924).

Morrison and Bogan (1927), after a roentgen study of the bone development in diabetic children, drew the following conclusions:

1. Bone development is in advance of

the chronologic age in children with diabetes of recent onset.

2. Bone development is below the chronologic age in children with diabetes of long standing.

3. Narrowness of the shaft and thinness of the cortex characterize the diabetic child of long standing.

4. Bone atrophy occurs in certain number of children who develop diabetes before the ninth year, but has not been found above that age.

5. Transverse striae of the bones are found in a larger percentage of diabetic children than of normal children, but we failed to associate a transverse line with the onset of the disease.

This study was made upon patients of Dr. E. P. Joslin.

THE QUESTION OF MARRIAGE

Should these diabetic children later marry? Joslin believes that the boys can and will at 21 years of age or over; the girls should have diabetes ten years before they assume so much responsibility. The diabetic girl who grows into womanhood and then approaches motherhood must be made conscious of the fact that stillbirth is a common association of diabetic women. Offergeld (1909) showed that 51 per cent of the children born of 57 diabetic women were stillborn; that 11 per cent died soon after birth; that 7 per cent died in infancy from one cause or another, making a total mortality of 66 per cent. With the advent, however, of the insulin era it woud appear that the per cent of stillbirths will be materially decreased though White (1932) says that "up to the present time only 50 per cent of the offspring of diabetic women have lived."

Lemann (1927) gives the following comparison of statistics taken from the records of Charity Hospital in New Orleans.

INCREASE OF INCIDENCE OF DIABETES
CHARITY HOSPITAL, NEW ORLEANS

Admissions to Hospital	Total	W.	C.
1898 — 1909	101,565	61,298	40,265
1909 — 1919	160,044	92,040	69,004
1921 — 1926	148,671	91,998	66,673

No. of Diabetics			Percentage		
Total	W.	C.	Total	W.	C.
64	45	19	0.63	0.73	0.47
194	135	49	1.20	1.40	0.86
439	211	228	3.00	2.30	3.40

To this table may be added the following data: From July 1, 1924 to June 30, 1936 there were 246,014 admissions of which 2346 were diabetic patients, making a percentage of 9.5. There were 2261 adults and 85 children under 12 years of age, or 3.7 per cent.

At the Touro Infirmary, from July, 1933 through December, 1936, there were 388 adult cases and 21 children 12 years and under, or 5.4 per cent.

The exact figures of deaths from diabetes in the Registration States occurring from 1916 to 1935 are published by the Department of Commerce, Bureau of Census.

DR. C. J. BLOOM'S CASES

Case	Year Onset	Sex	Age	Outcome	Gentile
1	1911	M	10 yrs.	Dead	*
2	1918	F	11 yrs.	Deserted	*
3	1927	M	18 mos.	Living	*
4	1927	F	12 yrs.	Dead	*
5	1930	M	6 yrs.	Dead	*
6	1931	F	13 yrs.	Living	*
7	1935	F	18 mos.	Living	*
8	1936	M	6 yrs.	Living	(¼ Jewish)

From 1916 to 1936 there were eight cases of diabetes among 16,853 children or one case from each 2106 children.

Interestingly enough von Noorden (1912) states that heredity is much less marked in infancy, and is more commonly seen in blood relatives whose marriage must be regarded as an endogenous degenerative disease, and Abt (1925) concludes that families affected with diabetes reveal, in succeeding generations, the incidence of diabetes in younger patients.

GENERAL INFORMATION AND DIFFERENTIAL DIAGNOSIS

The care of any patient is a trust, but

the child is an added trust. It has generally been conceded that physical examinations should be held periodically each year of one's life. To this routine, must be added the necessity of obtaining the urine specimen even though the child be an infant, at such a time when the patient is thoroughly examined. In this way, perhaps, diabetes mellitus might be recognized at an early age and, like tuberculosis, will be more successfully treated. The urine can be obtained by the applying of a urinary receptacle, simple in structure. There are certain peculiarities of urine in childhood that should be mentioned; the excretion per pound of body weight is greater than that of an adult; the urine is pale and of low specific gravity at birth and, as the second year is reached, the excretions become proportionately less and the specific gravity higher. The concentration of blood sugar in the fasting state is between 80 to 120 mg. per cent and is maintained with great tenacity (White). It is equally true that the metabolism and utilization of glucose in the normal infant and child is greater than that of the normal adult.

The finding of sugar in the urine and the reduction of Benedict's and Fehling's solutions need not be glucose. The other sugars sometimes found are: (1) Lactose; (2) pentose; (3) levulose; (4) maltose and (5) glycuronic acid. For each sugar there are special tests which, in themselves, would reveal their respective identity. Renal glycosuria is frequently mistaken for diabetes mellitus and is not infrequently met with in childhood. It is a glycosuria independent of diet, a normal blood sugar and an absence of polyuria, polyphagia, and polydipsia. The symptomatology of juvenile diabetes is a difference of degree rather than of kind.

TREATMENT

Joslin (1936) has divided the treatment into four subdivisions: (a) Education; (b) diet; (c) exercise; and (d) insulin—protamine insulin. Necessarily, the question of education and exercise relates to the adult particularly; in the child the supervision must be in the hands of one who is to guide the destiny of that child, and one alone. This individual will fortunately consciously or unconsciously memorize the essentials pertaining to the care and treatment of the diabetic child and, if the child is old enough, he or she will, if properly tutored, respond wholeheartedly and by degrees through years of treatment will ultimately be able to guide his or her own destiny. Education pertains not only to the family itself, but to the doctor in charge of the patient. Many stress the fact that in clinics where insulin or protamine insulin is administered only one doctor or his representative should care for an individual case. Overactivity on the part of the child must be obviated. On the other hand, the child must be permitted, if possible, to follow a normal life as far as limited exercise is concerned. Additional protection must be sought through immunization against all communicable diseases, where such is possible.

The treatment as far as the diet and administration of insulin and protamine insulin is concerned is, as someone has stated, distinctly individualistic. No general diet can be given for a particuar age, nor the number of insulin units for a particular weight. Before the diet is definitely decided upon, provided the child is old enough to obtain the necessary urine specimens, tolerance tests should be resorted to. Then the caloric requirement of the diabetic child must be determined. From five to eight years 1100 calories are necessary each 24 hours; from nine to 12 years, 1200; and from 13 to 16 years, 1400 White (1932). This includes allowances for basal metabolism, for growth, and activity. White (1932) has deduced from experience that normal growth has occurred when diets were from 30 to 40 per cent above the actual basal metabolism or from 40 to 50 per cent above the theoretical metabolism. Ladd feels that the diabetic child will exhibit normal growth on a diet which is two-thirds of the normal diet.

White (1932) gives the following information, in part, concerning diet:

"The Partition of Diet—The choice of the partition of the diet for the diabetic young or old is today a much debated question. . .

"The partition of our diets has been as follows: From 25 to 50 per cent of the calories were given in the form of carbohydrate, from 10 to 20 per cent in the form of protein, and from 35 to 65 per cent in the form of fat. For a child of five years of age weighing 36 pounds (16 kilos) to whom we wish to give 75 calories per kilogram body weight the quantities of carbohydrate would range from 75 to 150 grams, the protein from 30 to 60 and the fat from 46 to 86 grams. Our own selection of diet would be carbohydrate 100 grams, protein 48 and fat 64 . . .

MINIMAL AND OPTIMAL QUANTITIES OF CARBOHYDRATE FOR INFANTS AND OLDER CHILDREN (MARRIOTT)

	Infants		Older Children	
	Grams per kg.	Calories per cent.	Grams per kg.	Calories per cent.
Minimal	3	10 to 15	2.5 to 3	10 to 15
Optimal	10 to 15	40 to 60	8 to 10	40 to 60

"Restriction of carbohydrate in the diet below 50 grams is not wise for the growing diabetic child. If the carbohydrate is reduced, the fat must be increased and the danger of ketosis is apparent. . . . . When more than 6 grams of fat are given per kilogram of body weight, its absorption is defective, a negative balance for cholesterol occurs, and calcium is excreted rather than stored.

"The quantities of fat in the normal diet according to various investigators range from 20 to 50 per cent of the total calories. The range in our diets is from 36 to 60 per cent. . . .

"Protein. The minimal amounts of protein required by children have been placed from 1.8 to 2.3 grams per kilogram body weight, or 7 per cent of the total calories in infancy, to 10 to 20 per cent of the total calories of the older child. . . . ."

INSULIN

The amount of insulin which a diabetic child requires to keep his urine sugar free and his blood sugar normal varies with age, weight, severity of disease, intercurrent complications, as well as with the diet and amount of exercise. As a routine it is best to initiate treatment with a minimum number of units which, according to White (1936), should be as follows: Under five years of age, 3 units three times a day; between five and 10 years, 5 units three times a day; between 10 and 15 years, 10 units three times daily; necessarily the dose is altered each day and through adjustment of time of administration, diet and the number of units, the number of injections is ultimately reduced to two daily. Lest it be forgotten, the weight chart must be carefully watched, for though the child may be sugar free, the amount of food he is receiving might be inadequate to produce a progressive gain in weight. In this connection, one should attempt to keep the weight within 10 per cent of the normal.

PROTAMINE INSULIN

Protamine insulin in the hands of many has not been wanting and has fulfilled all of the claims of Hagedorn. While many believe it will never replace insulin entirely, it will, however, reduce the number of hypodermic administrations daily and in some cases, perhaps, will limit the dose to a single one in each 24 hours. It goes without saying that the successful use of either of these therapeutic agents requires time before marked improvement can be anticipated. Anxious parents often ask, and rightly so, "Do you believe my child will reach the point where the administration of insulin or protamine insulin will not be necessary?" In response to this inquiry, White (1936) says that 14 patients in a series of 1,063 juvenile diabetics have apparently appeared to have spontaneously arrested diabetes.

Finally, the confidence of the patient must be gained and, in turn, the child must have respect and reverence for the doctor. Explanations and encouragement must be given to the child; his veracity must not be questioned even though you are conscious of

the fact that he has "cheated" in so far as sugar is concerned. They are all necessarily high strung and by some are considered proverbially precocious. In the end, the child who is old enough to realize his precarious condition will not deviate from the prescribed diet or routine that is given him. Realize finally that diabetes is a personal disease; the physician's relation with the child must be of an intimate nature.

PROGNOSIS

The prognosis of childhood diabetes is always serious but now not necessarily fatal. Antedating the Banting era, the life expectancy of the 10 year old diabetic child seldom exceeded two years. Already it is now between 31 and 32 years; later on, perhaps, it will be much more prolonged.

White (1932) gives the following table:

STATUS OF 750 DIABETIC CHILDREN IN 1931

Period first seen		Total No. of cases	Number Living Oct. 1931	Per Cent Living
Naunyn,	1898-1914	61	1	2
Allen,	1914-1922	170	49	28
Banting,	1922-1931	519	483	93

SUMMARY

1. The history of diabetes mellitus has been outlined, with especial reference to infants and children.

2. The various eras and treatments therein have been mentioned.

3. Incidence and etiology have been briefly discussed.

4. Diabetic surveys of New Orleans have been reviewed and United States Government chart reporting deaths from diabetes mellitus by age in the registration states, 1916-1935, has been analyzed.

5. Treatment, including education, diet, exercise, insulin and protamine insulin, according to Joslin and others, has been recorded and evaluated.

CONCLUSIONS

1. Diabetes in infancy and early childhood is relatively more common than previously accepted.

2. The number of cases of diabetes mellitus in New Orleans reveals a decided increase, not only in number but also the proportionate number of children exhibiting this disease.

Touro Infirmary July, 1933-December, 1936: Adult cases 388, children 12 years and under, 21; 5.4 per cent.

Charity Hospital July, 1924-June, 1936: Adult cases 2261, children 85; 3.7 per cent.

Charity Hospital July, 1924-June, 1936: Admittance 246,014—cases of diabetes 2346; or 9.5 per cent diabetes per 1000 admissions.

3. Eight additional cases of diabetes mellitus are reported; two at 18 months of age, being the youngest, and 13 years the oldest.

4. Prognosis in infancy and childhood is very favorable. Prior to the Banting era, the death rate was 98 per cent, between 1898 and 1914; 72 per cent between 1914 and 1922; and only 7 per cent between 1922 and 1931, as reported in the statutes of 750 diabetic children in 1931 by White. Life expectancy has been increased from two years to between 31 and 32 years.

5. Remember the personal relationship that must exist between patient and doctor in the treatment of this disease and limit the number who directly supervise the child.

REFERENCES

Abt, I. A., and Strouse, S.: Observations on traumatic diabetes in children, Am. J. M. Sco., 141:338, 1911.

Abt, I. A.: Pediatrics, W. B. Saunders Co., Phila., 1923.

Feldmann, I.: Diabetes intrauterina, Centralbl. f. allg. Pathol. u. path. Anat., 42:435, 1928.

Fitz, R., and Murphy, W. P.: Muscular efficiency of patients with diabetes mellitus, Arch. Int. Med.,34:402, 1924.

Frolich, T.: Studies on Diabetes Mellitus, Barnealderen, Christiania, 1903.

Garrod, A. E., Batten, F. E., and Thursfield, H.: Disease of Children, Edw. Arnold, London, 1913.

Higgins, F. A.: Traumatic glycosuria; observations made in two hundred and twelve cases of head injuries, Boston M. & S. J., 132:197, 1895.

Hoeninger, E.: Ueber die ephemare traumatische Glykosurie bei Neugeborenen, Deutsche.med. Wchnschr., 37:500, 1911.

Joslin, E. P.: Treatment of Diabetes Mellitus, Lea and Febiger, Phila., 1917 and 1928.

Joslin, E. P.: Treatment of diabetes mellitus, Minn. Med., 19:570, 1936.

Kleinschmidt, H.: Diabetes mellitus im Kindesalter, Med. Klin., 12:1277, 1916.

Ladd, W. S.: Growth in children with diabetes mellitus, Am. J. Dis. Child., 32:812, 1926.

Langstein, L.: Diabetes mellitus und Glykosurie im Sauglingsalter, Verhandl. d. Kong. f. inn. Med., 26:209, 1909.

Lemann, I. I.: Diabetic gangrene in the South, J. A. M. A., 89:659, 1927.

Morrison, B., and Bogan, I. K.: Bone development in diabetic children;reentgen study, Am. J. M. Sci., 174:313, 1927.

von Noorden, C.: Die Zuckerkrankheit und ihre Behandlung, Berlin, 1912.

Offergeld, H.:Ueber die Indikationen zur Unterbrechung der Schwangerschaft bei zuckerkranken Frauen, Deutsche. med. Wchnschr., 35:1226, 1909.

White, Priscilla: Diabetes in Childhood and Adolescence, Lea and Febiger, Phila., 1932.

Williamson, R. T.: Diabetes Mellitus, Pendland, London, 1898.

THE PATHOLOGY OF DIABETES MELLITUS†

SHIELDS WARREN, M. D.

BOSTON, MASS.

Ever since the observation by von Mering and Minkowski[1] that the urine of depancreatized dogs attracted insects on the laboratory floor and their discovery that the animals were glycosuric, the problem of diabetes has continued to be one for the laboratory, whether in research or in clinical control of the patient.

The discovery of the separate islands in the pancreas by Langerhans prepared the way for the speculation by Laguesse[2] that they were actually organs of internal secretion. With the observation by Opie[3] that in certain cases of diabetes mellitus there was a specific type of hyaline degeneration in the islands, the foundation for the present pathologic conception was laid. This hyalinization of the islands of Langerhans is caused by the deposition of a substance related to or possibly identical with amyloid.

It is laid down between the endothelium of the capillaries and the epithelium of the islands so that it exerts a two-fold action, not only cutting off the island cells from their blood supply, but also directly compressing them and leading to their atrophy and ultimate disappearance. This hyalinization of the islands of Langerhans is not a static process. It represents a gradual accretion of material compensated for, to greater or less extent, by the enlargement of existing islands or the development of new islands from the duct epithelium.

Its presence is not restricted to cases of diabetes. In mild degree it is found in patients dying from other causes, but who presumably would be diabetics were the process to continue unchecked. The effort of the insular epithelium to compensate for this injury through proliferation may lead to the production of islands of almost adenomatous size.

In general, hyalinization of the islands of Langerhans occurs in elderly individuals and the diabetes associated with it tends to be fairly mild and of long duration. In younger individuals a fibrosis of the islands may be found in which fibrous tissue is laid down without leukocytic action or evidence of necrosis in much the same site as is the hyaline. This change may range from a very slight fibroblastic proliferation to a complete replacement of numerous islands by scar tissue.

In children and young adults a lymphocytic infiltration of the islands is sometimes observed which is characterized by a sharp restriction to the insular zones and a very appreciable disappearance of the epithelial elements of the islands. In all these changes described there is no significant difference in the degree of involvement of the alpha and of the beta cells.

Allen[4] emphasized some years ago a change first described by Weichselbaum,[5] the hydropic degeneration of the insular epithelium. This hydropic degeneration is assumed to be due to an attempt of the functioning insular cells to produce a sufficient amount of insulin to meet the needs of the body and a consequent degeneration of the cellular elements. I have seen very few cases of true hydropic degeneration and in most of those in which it appears, it is simply a postmortem change.

In hemachromatosis practically experimental diabetes exists, in that in this disease due to a disturbance of iron metabolism there is first involvement of the liver and sooner or later involvement of the pancreas, including the island cells with resultant diabetes. This diabetes has been termed "bronze diabetes" since it involves pigmentation of the skin. Here there are known chemical substances, hemofuscin and hemosiderin, being deposited in varying degree in the cells of the islands of Langerhans, and the severity of the disease increases as the pigment is deposited and as the generative changes

---

†From the Laboratory of Pathology, New England Deaconess Hospital.

fail to keep up with the degenerative process.

Indeed, one of the interesting things about diabetes is that no matter what the lesions of the islands may be, the diabetic syndrome becomes established and one cannot predict with any degree of certainty, no matter how carefully the patient is studied, what will be found at postmortem in the islands.

The most interesting and encouraging factor in the entire study of diabetes is that at least one-fourth of the pancreases show no appreciable pathology, and it must be assumed that either a functional disease or a disarrangement of cellular activity exists which is so slight that no morphologic change can be detected. The fact remains that there is no pathologic barrier to the return of function in at least one-fourth of the cases of diabetes and most of these cases lie among children and young adults. Whether spontaneous cure or cure after long periods of insulin therapy will occur with any degree of frequency is uncertain, but already isolated cases of apparent cure of diabetes in childhood are known.

EXTRA-PANCREATIC PATHOLOGY

Leaving the pancreatic pathology in diabetes, a disturbed and controversial field is entered. The possible role of the pituitary has been emphasized by many. My own studies have convinced me that in the ordinary case of diabetes mellitus, pituitary pathology is not a factor. Long, with his experiments on the adrenal, has shown that this may play a role in experimental diabetes, but here again no consistent pathologic change is found in the human. Hepatogenic diabetes is as yet nebulous.

When the pathologic changes secondary to the diabetic process are considered there is a considerable body of information. First, the changes directly brought about by the disturbed carbohydrate metabolism must be studied. This is essentially a disturbance of the glycogen deposits so far as pathologic observation goes, because sugars are so highly diffusible that it is impossible to detect their presence in the tissues by histologic technic. With glycogen, however, the Best carmine technic gives a ready means of identification. Here the fundamental change is depletion of the normal deposits and laying down glycogen in abnormal loci. Prominent among these points are the nuclei of liver cells and the renal tubular epithelium, particularly in Henle's loops. It is interesting in passing to note that the characteristic changes in glycogen deposition in diabetes were observed years before the relationship of the pancreas to the disease had been described.

The extraordinary susceptibility of the diabetic patient to infection has as yet been clothed in mystery. Various types of tests have as yet failed to show any reason for this point of major clinical importance. Studies of the leukocytes, of opsonic index, of complement, of antibody, and other factors have failed utterly to throw any light on this problem. Suffice it to say that when the diabetic patient is brought back to normal through diet and insulin, his resistance to infection is also brought back to normal levels.

Now that diabetic patients are living longer, now that coma is not a major cause of death, more and more emphasis is laid on the disturbed lipoid metabolism in diabetes because of its undoubted role in causing the vascular injury that is of such overwhelming importance today. The lipemia of certain diabetics, the predilection of diabetics as a whole to develop gall stones, the occurrence in uncontrolled diabetics of xanthomata, all point to this disturbed metabolism, but the thing that brings gray hairs to the doctor and kills the patient is the deposition of lipoid in the arterial walls. The untreated or poorly treated patient develops arteriosclerosis of the atheromatous type earlier in life and faster than does the normal individual. In fact in the pre-insulin days I never autopsied a diabetic patient with over five years' duration of the disease, regardless of age, who did not show arteriosclerosis.

The arteriosclerosis of a diabetic is not a special lesion although a characteristic one. It is in essence an extension of the atheromatous type of arteriosclerosis from the site in which it commonly occurs, the aorta and great vessels, to the muscular arteries of the extremities and to the coronaries. It may or may not be associated with medial calcification of Mönckeberg. The better control of the diabetic patient with more liberal carbohydrate in the diet permits a more normal metabolism, and less and less arteriosclerosis is observed.

It is perhaps not too much to expect that with full utilization of the means of control of the disease now at our disposal the diabetic patient may be rendered no more susceptible to arteriosclerosis than is the normal individual.

SUMMARY

The message given by the study of the pathology of the disease is essentially one of hope. First, the damaged pancreas makes some, though very abortive, efforts at regeneration. Second, no demonstrable pathology can be brought out in many cases and consequently irreparable damage has not been done to the tissues. Finally, with more adequate control of the disease, its complications can be materially reduced.

REFERENCES

1. von Mering, J., and Minkowski, O.: Diabetes mellitus nach Pankreasextirpation, Arch. f. exper. Path. u. Pharmakol., 26:371, 1889.
2. Laguesse, E.: Sur la formation des ilots de Langerhans dans le pancreas, Compt. rend. Soc. de biol., 45:819, 1893.
3. Opie, E. L.: On the relation of chronic interstitial pancreatitis to the islands of Langerhans and to diabetes mellitus, J. Exper. Med., 5:397, 1901.
4. Allen, F. M.: Experimental studies in diabetes. Series III. The pathology of diabetes, J. Metab. Research, 1:1, 1922.
5. Weichselbaum, A.: Sitzungsb. d. k. Akad. d. Wissensch. Math.-naturw. Kl., 73:119, 1910.

SOME MINOR DISORDERS OF THE FEMALE URETHRA*

EUGENE VICKERY, M. D.
NEW ORLEANS

That inflammatory disease of the female urethra, exclusive of that caused by the gonococcus, is frequent in occurrence has been established by both pathological and clinical observation. Unfortunately these conditions have not been generally recognized, and while it is not often of serious import many women continue to be distressed with symptoms which are usually ascribed to "acid urine", "cystalgia", "pressure on the bladder", or "neurosis".

Bugbee reports urethral lesions in 69 per cent of 1000 women suffering from frequency. Stevens states that 67 cases (15 per cent) in a series of 425 female patients with urinary disease showed involvement of the urethra alone. Review of the last 500 cases seen in our office reveals a primary diagnosis of urethral conditions in 109 instances. These are divided as follows:

Gonorrheal urethritis	17
Non-specific urethritis	73
With inflammatory tags	15
Caruncle	2
Urethral diverticulum	2

McKenzie in a recent study of 30 adult urethras at autopsy found evidence of inflammation in 95 per cent, and 36 per cent of children under the age of four showed a definite round cell infiltration in the submucosa.

It is not surprising to find such a high incidence of infection when we bear in mind the proximity of the vagina and rectum. This is logically the most common source, though Hunner and others have called attention to foci of infection in distant parts of the body as a possible cause. The urethra harbors infection readily as numerous small glands are found throughout, but particularly in the middle and distal thirds. These glands are referred to as the homologue of the prostate by Johnson, Folsom, and others. Virchow mentioned this possibility. Embryologically, the female urethra is the homologue of the male prostatic urethra proximal to the utricle. When these glands are infected there is always the possibility of an ascending cystitis and pyelonephritis, which is by no means infrequent. Conversely, when there is pyuria of renal or vesical origin, the urethra and its glands are constantly exposed to this infection and a residual urethritis after the urine has become entirely negative in these cases is relatively common.

The bacteriology in cases of chronic inflammatory urethral disease is not characteristic. Smears usually show a number of different types of organisms, and most any of the ordinary pyogenic bacteria are capable of being the etiological factor.

CHRONIC URETHRITIS

The most common disease of the female urethra is a chronic non-specific urethritis. This may cause no symptoms on one extreme, and on the other, may be the source of a great deal of distress. Ordinarily, the patient complains of frequency, burning, urgency, pain on void-

*Read before the Orleans Parish Medical Society November 23, 1936.

ing, or pain in the region of the urethra or bladder, and occasionally hematuria, which as a rule is terminal. She may present herself with either one or a combination of these troublesome symptoms. Often her social habits have been so limited that she has developed some mental disturbances. Folsom and Alexander have seen patients relieved of pain in the lower abdomen, back, and femoral regions by treatment of the urethra.

Examination usually reveals a urine entirely negative unless there is coexistent cystitis or pyelonephritis. Inspection of the external meatus may show some redness and a slight discharge may be present. If the opening is contracted down it is likely to be a pale pink in color. This we speak of as a "cicatricial" urethritis in distinction from the "granular" type. However, a combination of the two types may be seen in one individual. The "cicatricial" process is characterized by an excess of fibrous tissue, and this may result in the production of a large caliber stricture which makes itself known by difficulty in voiding. The normal size of the urethra varies between 26-F and 34-F.

Having found a negative urine and a normal bladder capacity (to exclude interstitial cystitis) the condition is treated by the use of sounds. Starting with one which fits the canal snugly, the patient's urethra is dilated two or three times each week, gradually increasing the size of the instrument used. After dilating, an instillation of one or two per cent silver nitrate or one of the colloidal silver salts is beneficial. It is desirable to avoid any undue pain which is entirely unnecessary. This treatment will relieve a majority of the cases, but if it is carried out on four or five occasions without improvement, cystoscopy and urethroscopy are indicated. The urethra is carefully scrutinized for any infected glands, the openings of which are red and may be somewhat dilated, and pus may exude from them. Skene's glands should be stripped with the finger. Topical application of ten per cent silver nitrate to any infected glands or granular areas is often of benefit. Better still is the cauterization of these spots with the pure nitrate fused on a stiff wire and applied through an open endoscope. Treatment of skenitis with the high frequency current is a recognized procedure.

URETHRAL TAGS OR POLYPS

In a fair number of cases (16 per cent in this series) proliferative lesions will be found with the urethroscope. These are commonly termed tags or polyps, and are evidently of inflammatory origin and perfectly benign. They may be pedunculated, fimbriated, or sessile. Their most common site is on the sphincteric margin where they may be visualized in any portion of the circumference. However, they

Fig. 1. Urethral tags or polyps.

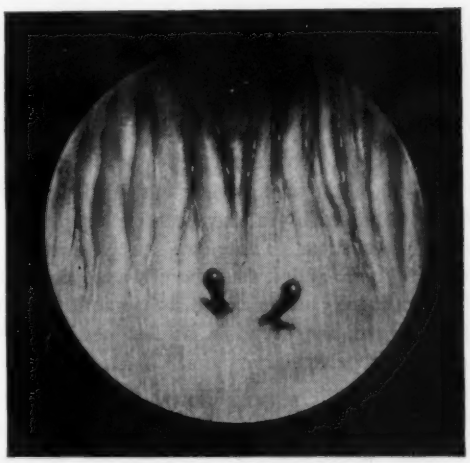

Fig. 2. Urethral tags or polyps.

Fig. 3. Electrocoagulation of urethral tag (polyp).

are also found distal to the sphincter, and if sessile they may be difficult to find. These proliferations are usually the cause of persistent trouble, though I have seen them completely asymptomatic. Treatment is by cauterization or electrocoagulation, using a Bugbee electrode, the latter being the method of choice. Anesthesia is usually best for this procedure, and a sacral block is entirely satisfactory. After electrocoagulation it is advisable to lavage the bladder two or three times weekly, as infection frequently occurs as a result of devitalization of tissue. One treatment of this nature as a rule is sufficient, but if relief is not obtained, careful and repeated urethroscopy is carried out. It may be quite difficult to find "the spot" responsible for symptoms, but perseverance is generally rewarded.

Small cysts which are said to have their origin from the cell nests of von Brunn are found occasionally in the urethra and termed urethritis cystica. These are rarely the cause of symptoms, and it is generally accepted that they are merely evidence of a chronic infection. Similar cysts are found in the bladder, ureters, and kidney pelves.

DIVERTICULUM

One can hardly pass over this uncommon condition when speaking of urethritis, as concomitant urethral symptoms may easily mask a diverticulum. No one has definitely determined their mode of origin, but they are seen after injury of the urethra and periurethral abscesses. Conjecturally, a gland may have its duct occluded, form a cyst, and rupture into

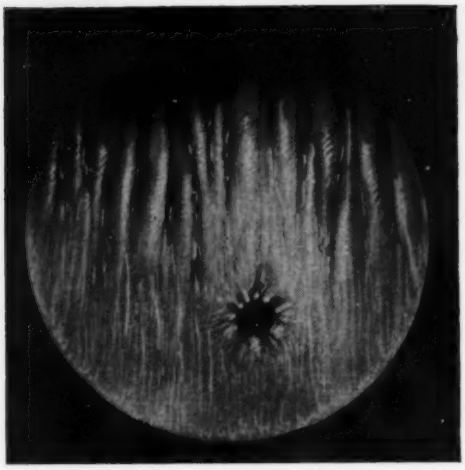

Fig. 4. Ostium of urethral diverticulum.

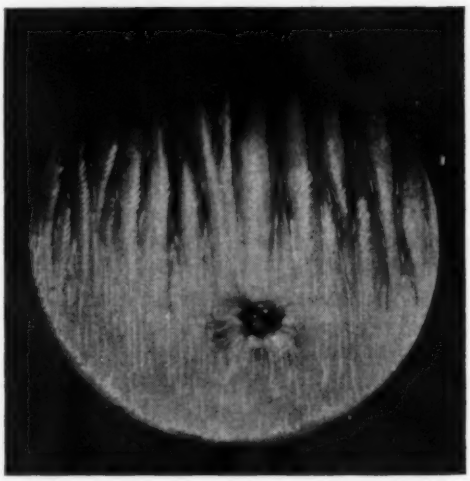

Fig. 5. Ostium of urethral diverticulum exuding pus.

the urethra thus forming a pocket. It is also reasonable to assume that chronic inflammation in a gland may cause a gradual dilation. Some are apparently congenital. Stricture or any other obstruction distal to the sac will aid and abet in its gradual enlargement. These diverticula may be small and shallow, or may extend

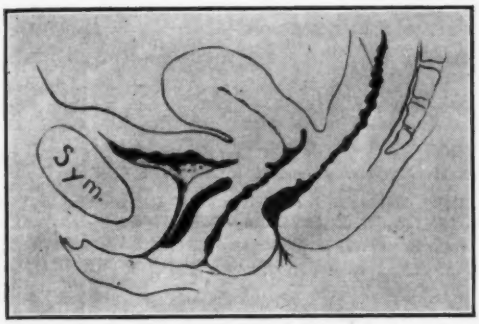

Fig. 6. Diagrammatic sketch of urethral diverticulum.

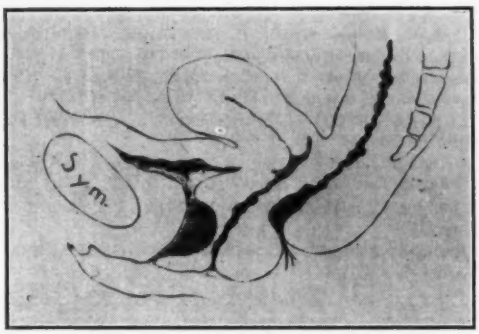

Fig. 7. Diagrammatic sketch of urethrocele.

up under the trigone attaining a two or three ounce capacity. Stagnation of urine in the pocket leads to infection, and the symptoms of urethritis are almost always present. In addition, the patient may notice some difficulty in voiding and a dribbling of urine for several minutes afterward. Inspection often reveals a bulging in the anterior vaginal wall which when pressed upon ejects purulent material through the meatus. If a catheter happens to enter the neck of the diverticulum, pus is evacuated; whereas on other occasions the bladder is entered and urine is obtained. Examination of the urethra will disclose the opening of the diverticulum. Care must be taken to differentiate this condition from urethrocele, which is a large sacculation of the entire urethra distal to the internal sphincter and which causes essentially the same symptoms. Treatment for diverticulum is excision of the sac. This is tedious and sometimes difficult, with stricture, incontinence, and fistula being postoperative results in some cases. Occasionally a calculus is found in diverticula, and it usually cannot be removed until the sac is opened.

CARUNCLE

Caruncle is a benign pedunculated growth occurring at the external meatus and of inflammatory origin. They are found to be separable into three distinct lobes and almost always spring from the posterior lip of the meatus. Histologically, they are made up of loose connective tissue covered by the urethral mucous membrane, and they are highly vascular. Symptomatically, in addition to the symptoms of chronic urethritis, we find complaints of

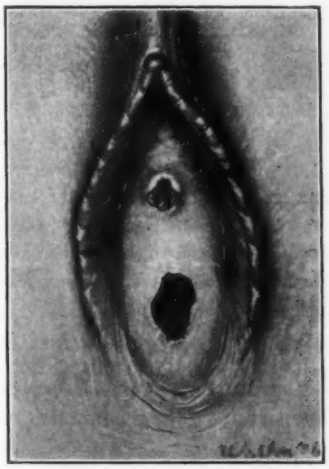

Fig. 8. Caruncle

"spotting" on underclothes, frank bleeding, pain on contact with clothing, and severe burning externally on voiding. Some have no complaints. On inspection a strawberry-like growth is found which may show any of the various shades of red in color. It is important to separate the lobes as this helps in distinguishing it from a prolapsed mucosa which is a red, edematous, and tender protrusion of the posterior lip of the urethral orifice, and is found much more frequently than caruncle. Crenshaw's method of treatment of caruncle consists of excision of the lobes after the pedicle is clamped, followed by chemical cauterization of the base, and seems the method of choice, as

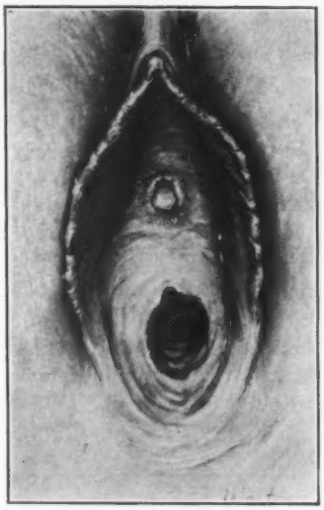

Fig. 9. Prolapsed urethral mucosa.

it precludes troublesome hemorrhage, does not cause scar tissue to any extent, and allows a biopsy to be done. This latter is of importance as an extremely rare case of epithelioma at the meatus is encountered. Caruncle is prone to recur, and after removal, the cervix and vagina should be carefully inspected and any source of infection corrected.

CONCLUSIONS

1. Chronic inflammatory disease of the female urethra is extremely common.

2. A wider recognition of this possibility by the profession will bring relief to many women with distressing symptoms.

3. Urethritis should always be considered as a focus of infection which may ascend, and also often remains as a focus after pyelonephritis or cystitis is cured.

4. While most cases of urethritis respond readily to treatment, it occasionally requires persistence and patience to give relief.

5. Foci of infection should be eradicated, particularly vaginal and cervical foci.

REFERENCES

Aronstane, N. E.: The various gross pathological conditions of the urethra revealed by urethroscopy, Urol. & Cutan. Review, 19:490, 1915.

Ballenger, E. G.: The treatment of urethral caruncles by fulguration, J. A. M. A., 19:1420, 1817.

Ballenger, E. G., and Elder, Omar F.: The diagnosis and treatment of certain conditions of the vesical neck, South. Med. J., 17:506, 1924.

Barnett, Charles E.: The female prostate, Ann. Surg., 1906.

Beach, E. W.: Diseases of the female urethra, Urol. & Cutan. Rev., 38:545, 1934.

Blesh, A. L.: Urethral caruncle: case, treatment, remarks, J. Okla. M. Assn., 15:215, 1921.

Boyd, Montague L.: Strictures of the urethral meatus in the female, J. A. M. A., 92:2154, 1929.

Bugbee, H. G.: Frequency of urination in women, J. A. M. A., 58:693, 1917.

Bumpus, H. C.: Diverticula of the urethra, Surg. Gyn. & Obst., 29:388, 1919.

Chute, Arthur L.: Urethral prolapse in women: an indication of bladder disease, Boston Med. & Surg. J., 192:162, 1925.

Clark, J. G.: Chronic urethritis in women, Progr. Med., 2:265, 1924.

Cote, C. R., and Smith, G. G.: Chronic urethritis in women, Boston Med. & Surg. J., 38:596, 1923.

Counseller, Virgil S., and Paterson, Susanne J.: Carcinoma of the female urethra, J. Urol., 29:587, 1933.

Crenshaw, J. L.: The treatment of urethral caruncle, Minn. Med., 3:54, 1920.

Culver, H., and Forster, N. K.: Primary carcinoma of the urethra, Surg. Gyn. & Obst., 36:473, 1923.

Dressler, L.: Urethral calculi, Urol. & Cutan. Rev., 38:63, 1934.

Englander, S.: Diverticulum of the urethra, J. A. M. A., 68:351, 1917.

Folsom, A. I.: The female urethra, South. Med. J., 25:859, 1932.

Folsom, A. I., and Alexander, J. C.: Referred pain from female urethra, J. Urol., 31:731, 1934.

Graber, W. J., Jr.: Diseases of female meatus, Tex. State J. Med., 29:728, 1934.

Hepburn, T. N.: Prolapse of the female urethra, Surg. Gyn. & Obst., 31:83, 1920.

Howze, C. P., and Hennessey, R. A.: Urethral diverticula: Report of a case of diverticulum of the post-urethra stone, Surg. Gyn. & Obst., 32:392, 1923.

Hunner, Guy L.: Chronic urethritis and chronic ureteritis caused by tonsillitis, J. A. M. A., 1911.

Judd, A. M.: Urinary symptoms in women due to urethral pathology only, Am. J. Obst. & Gynec., 6:318, 1923.

Johnson, F. P.: Diverticula and cysts of the urethra, J. Urol., 10:295, 1923.

Johnson, F. P.: The homologue of the prostate in the female, J. Urol., 8:13, 1922.

Kalischer, G., and Eisenstaedt, J. S.: Lesions of the female urethra; Demonstration of four cases, Surg. Clin., Chicago, 3:1499, 1919.

Keefe, J. W.: Prolapse of the female urethra, J. A. M. A., 69:1935, 1917.

Kretschmer, H. L.: Fulguration treatment of urethral caruncle, Surg. Clin. Chicago, 2:833, 1918.

Levant, H. L.: Urethral caruncle, Med. Rec., 139:346, 1934.

Meltzer, M.: Cystourethroscopy as an aid in the treatment of urethritis in the female, Urol. & Cutan. Rev., 24:634, 1920.

Menville, J. G., and Counseller, V. S.: Mucoid carcinoma of the female urethra, Proc. Staff Meet. Mayo Clinic, 9:437, 1934.

Miller, C. Jeff: Suburethral abscess, or incomplete internal urethral fistula: Report of three cases, Am. Gynec., 1903.

Morse, H. D.: Etiology and pathology of pyelitis cystica, ureteritis cystica, and cystitis cystica, Am. J. Path., 4:33, 1928.

Murphy, J. B.: Urethral caruncle ablation, Surg. Clin., Phila., 45:913, 1916.

Neel, J. C.: Diverticula of the female urethra, Cal. State J. M., 16:494, 1918.

Ormond, J. R.: Non-purulent urethritis in women, J. Urol., 33:483, 1935.

Peacock, A. A.: Diverticulum of the urethra containing a large calculus; frequency of diverticuli in the prostatic urethra; tendency toward calculus formation in the presence of Staph. albus: Diagnosis and operation, Surg. Clin. N. Am., 4:1149, 1924.

Pedersen, V. C.: Urethral abscess, Am. J. Surg., 34:332, 1920.

Pedersen, J.: Chronic urethritis in women, a frequently overlooked condition, Tr. Am. Assn. G. U. Surg. 17:61, 1924.

Pomeroy, L. A., and Milward, F. W.: Radium in lesions of the female urethra, Am. J. Roentgenol., 12:524, 1924.

Shallenberger, W. F.: Chronic urethritis in women; a new method of diagnosis and treatment in obscure urethral pain, J. A. M. A., 66:1011, 1916.

Shivers, C. H. deT., and Cooney, C. J.: Formation of calculi in urethral diverticula of female, J. A. M. A. 102:997, 1934.

Sisk, I. R.: Diverticulum of the urethra, J. Urol., 12:169, 1924.

Smith, R. R.: Prolapse of the female urethra, J. A. M. A., 74:1639, 1920.

Stevens, Wm. E., and Henderson, J. Gordon: Urology in women and gynecology, J. A. M. A., 93:1282, 1929.

Thomas, G. J.: Urethrocoele, Surg. Clin. N. ,Am. 3:1263, 1923.

Walther, H. W. E., and Willoughby, R. M.: Proliferative lesions of the female urethra, South. Med. J., 28:531, 1935.

Watkins, T. J.: Prolapse of the female urethra, Surg. Gyn. & Obst., 40:687, 1925.

Weiner, S.: High frequency cauterization in the treatment of urethral caruncle, N. Y. Med. J., 98:1115, 1913.

Winsbury-White, H. P.: The influence of the lower urinary tract and the reproductive organs on the kidneys; with special reference to lithiasis and hydronephrosis, J. Urol., 36:469, 1936.

Wynne, H. M. N.: Urethral stricture of the female, Surg. Gyn. & Obst., 34:208, 1922.

Young, E. L.: Urethral caruncle, Boston Med. & Surg. J., 172:822, 1915.

Young, H. McClure: The female urethra, J. Missouri Med. Assn., 22:169, 1925.

Young, H. McClure: The use of the high frequency current in the treatment of lesions of the deep urethra, J. Urol., 7:221, 1922.

DISCUSSION

Dr. Hilliard E. Miller (New Orleans): It is difficult to dissociate lesions of the urethra and bladder from gynecologic problems, for in making a gynecologic survey an important part of the investigation consists of inspection of the urethra, the meatus, and palpation of the full length of the urethral canal. Chronic urethritis of non-specific origin, as Dr. Vickery has just said, is a frequent problem with us.

I believe that all too frequently injuries to the anterior vaginal wall are overlooked as a causative factor in urinary symptoms. I have seen many patients who were unrelieved after innumerable bladder irrigations, cystoscopic investigations, and dilatations of the urethra, and I have found after asking the patient to strain that the entire anterior vaginal wall was relaxed. When injuries cause this anatomic defect, the urethra instead of lying parallel to the vaginal canal, assumes a perpendicular position. These patients complain of incontinence; when they laugh or cough, they spill urine because of the incompetent sphincter resulting from distortion of normal anatomy.

The correction of cystocele and rectocele, as far as the gynecologist is concerned, is of the utmost importance in abolishing a common factor in the causation of incontinence of urine in women. The approach to the correction of cystocele and rectocele must be along the same lines as in the correction of hernias, because actually the anatomic defect is similar to that of a true hernia.

One of the most frequent causes of chronic and recurrent urethritis is gonorrheal infection of Skene's glands. It is easy enough to overlook infection in these structures unless cognizant of the fact that they are commonly involved in such infections. A thorough inspection of the urethral meatus will frequently show the openings of Skene's glands to be edematous and reddened, and if pressure is exerted on the glands a drop of pus exudes. In 99 per cent of instances, the causative organism is the gonococcus. In a certain per cent of these cases, destruction of Skene's glands can be accomplished by the introduction of pure carbolic on a small probe, afterwards neutralizing with alcohol. However, the most certain method of abolishing the infection is to probe the gland and destroy it with the actual cautery.

Above Skene's glands are several small mucus glands of the urethra which do not penetrate the full thickness and which may be the source of a chronic infection. These structures may be visualized through the endoscope and because of their shallow nature, infection can be cleared up by repeated silver nitrate applications. Infection of these glands gives rise to a granular appearance of the urethra.

Too often, the cervix as a primary cause of a chronic urethritis and cystitis is overlooked. The lymphatics at the base of the bladder connect directly with those of the cervix, and it is easy to understand that a chronic, persistent inflammation of the cervix may produce a chronic lymphangitis, which, while it is extravesicular, may create sufficient irritation to give rise to bladder symptoms. These cases are not relieved by bladder treatments of any kind, and one can only hope for a disappearance of the symptoms after the cervical infection has been completely eradicated

by the cautery, or by whatever surgery may be indicated for the correction of such a chronic inflammatory lesion.

It has been very definitely demonstrated that Trichomonas vaginalis will produce bladder symptoms because of the extravesicular involvement of the lymphatics under the base of the bladder, and that treatment of the Trichomonas vaginalis and the cessation of symptoms caused by this infestation will bring about amelioration of all bladder symptoms. Here again is a demonstration of the close association of the lymphatics of the vagina and those of the bladder. In such conditions the extravesicular involvement will show edema, reddening of the trigone of the bladder, yet the bladder urine is free of organisms, demonstrating clearly that the bladder irritability is occasioned by a condition which is outside the bladder mucosa itself.

Urethral strictures are uncommon problems in the female urethra. However, we see considerable diminution in the caliber of the female urethra in elderly women in the presence of definite senile changes. The urethra shares in the contractures which occur in the vaginal mucous membrane, and frequently, the caliber of the urethra may be reduced to one half normal size. The problem is difficult because it is very hard to dilate the urethra to anywhere near the normal size. Some cases are improved by the use of large doses of theelin combined with regular dilatations. The theelin renders the structures more elastic, reduces the dryness of the vaginal mucous membrane, and makes it possible to stretch the urethral canal to a dimension approaching normal size.

Suburethral abscesses are comparatively rare in the female. They usually result from extension of a chronic specific infection of Skene's glands, an infection spreading between the supportive structure of the urethra and the mucous membrane of the anterior vaginal wall. As a rule, they are localized and may reach a size of from 1 to 4 cm. in diameter. Should such an abscess form, extreme care must be exercised to determine whether it connects directly with the urethral canal, for should that be the case, a urethral fistula might be established by incising the abscess on the vaginal surface of the tumefaction.

Chronic non-specific urethritis is one of the most persistent and discouraging problems related to the bladder and urethra. There is an extensive definite induration throughout the entire length of the urethra. The mucous membrane is reddened and edematous, with irregular areas of granulation extending from the bladder sphincter to the external meatus, evidencing an old chronic problem where chronic inflammatory elements have been deposited in all layers of the urethral structures. In such instances, Skene's glands are commonly the site of the original infection. As a primary approach to the problem, destruction of these glands is essential. I have obtained the best results by the use of the Elliott machine with the urethral applicator, delivering heat to the involved structures of from 118° to 128° over a period of one hour. This is continued until the patient has had from fourteen to twenty treatments.

May I state in conclusion that the gynecologist must be constantly aware of the fact that co-existent with gynecologic lesions are many urethral and bladder problems, and that he must be on the alert to recognize these conditions, or fail to relieve the patient of the symptoms for which he has been consulted.

Dr. W. A. Reed (New Orleans): I have been particularly interested in diseases of the female urethra for many years, especially so, because of the teachings of my preceptor, Dr. Abraham Nelken, who considered the urethra a very important focus of infection in infectious diseases of the upper urinary tract. In recent years a great deal of study of the female urethra, as a focus of infection per se, has been done. Among the recent work is that of Mr. White of London, who was a guest speaker at the meeting of the American Urological Association in Boston, last May. His studies were made along the same lines as that of Folsom and Van Duzen of Dallas, and others. He showed that following the injection of carbon black under the trigone of the bladder, serial sections of the ureters and kidneys demonstrated the presence of the carbon black in both these structures, showing that there is, beyond a doubt, a direct lymphatic communication between the base of the bladder and posterior urethra, and the kidney itself. These facts, of course, cause one to realize that in treating infections of the upper urinary tract close attention must be paid to the condition of the urethra. Many times in the past I have observed a marked improvement in patients suffering with upper urinary tract infections following a simple inspection of the bladder by means of the cystoscope. This improvement was without doubt due to the improvement in the condition of the urethra, which resulted from the passage of the cystoscope. This fact is so true that no case of pyelonephritis or pyonephrosis receives appropriate treatment without ample dilatation of the urethra combined with direct treatment of the urethral glands or urethral polyps, if present, endoscopically or cystoscopically.

Dr. Miller brought out in his discussion the fact that frequent urination is a common complaint in aged females. Inspection of the urethra in these cases very often shows no evidence whatever of inflammation. It will be found, however, that in a large percentage of cases there is exist-

ing an atrophic constriction of the urethra which responds promptly to dilatation, with complete relief of the urinary frequency. It is also true that treatment of cervical infections, a point which was stressed by Dr. Miller, is necessary.

Dr. E. von Haam (New Orleans): I am very glad indeed that Dr. Vickery called attention to the fact that other diseases may infect the urethra besides gonorrheal infections. I would suggest to replace the term "non-specific infections" with "undetermined infections" as long as the causative organism is unknown. Many cases of so-called non-specific urethritis are now recognized as manifestations of lymphogranuloma inguinale and I had an opportunity recently to see two of those cases in Baltimore and in New Orleans. I believe that the Frei test should be made in all cases of urethritis of undetermined etiology.

Dr. Vickery (In conclusion): In answer to Dr. von Haam's question, I must say that I have not been fortunate enough to see any case of lymphogranuloma inguinale in the female urethra.

I want to thank Dr. Miller for bringing out the gynecologic side. I feel as he does that the position of the urethra in cases of cystocele certainly has something to do with the etiology of chronic urethritis. I also feel that a good many cases when they have the cystocele corrected will need some further treatment of the urethra after the cystocele is put back in place. I am sure Dr. Miller will agree with me.

TREATMENT OF BRONCHIAL ASTHMA*

REPORT OF 244 FOLLOW-UP CASES

W. H. BROWNING, M. D.
SHREVEPORT

The cure of bronchial asthma is not as yet one of the accomplishments of medical science. Hygeia magazine[1] has exposed, in the following list, many remedies claiming to cure this disease which are purely nostrums:

Ascatco, asthma-non, asthma-sera, asthmatabs, az-ma-syde, Carlin's asthma remedy, Florence formula, Force's asthmanna, free breath, Fugate's asthma remedy, Gardner's remedy, Hair's asthma cure, Hayes' asthma cure No. 781 and No. 808, Hart's Swedish asthma medicine, Himrod's asthma powder, Lane's asthma cure, himalaya, Kellogg's asthma remedy, Leaven's asthma prescription, Munyon's asthma cure, plantoxine, Power's asthma relief, razmah, rinex, Schiffman's asthmador, Stello's asthma cure, Sterline's asthma and hay fever remedy, Taft's asthmalene, Tucker's asthma specific, Webb's famous prescription. The majority of these remedies are composed of compounds of iodides and arsenic. Although there is no cure for asthma, the control of its symptoms is easily within the power of any physician.

*Read before the Louisiana State Medical Society, Monroe, April 28, 1937.

TREATMENT OF ACUTE ATTACK OF BRONCHIAL ASTHMA

In relieving an acute attack of bronchial asthma, a physician has a choice of the following biologicals and drugs: 1. Adrenalin hydrochloride (1:1000 solution) by hyperdermic. The dosage should not exceed 0.3 c.c. This dosage may be repeated at hourly intervals if necessary. The large doses of 0.5 c.c. to 1 c.c. are dangerous and may, occasionally, account for a death.

2. Adrenalin hydrochloride (1:1000 solution) and ephedrine sulphate (3 per cent solution), mixed in equal portions, dosage not to exceed 0.3 c.c., is often very satisfactory because of the immediate relief produced by the adrenalin hydrochloride and the prolonged effect produced by the ephedrine sulphate.

3. Adrenalin hydrochloride (1:100 solution), used as a laryngeal spray with a nonmetallic atomizer is often effective if used early in the attack and has the advantage of not requiring the services of a physician.

4. Opiates are often necessary but are dangerous for asthmatics because of their habit forming qualities.

5. Ephedrine sulphate, orally or by hypodermic, will usually give relief but the action is very slow.

6. Nitrates usually give quick relief when used as an inhalant but often cause distressing symptoms and sometimes contribute to an asthmatic death.

7. Neosynephrin hydrochloride, used by hypodermic or as a nasal and laryngeal spray, may give relief but the action is slow.

8. Atropine sulphate sometimes is very ef-

fective but not at all satisfactory in most cases, because it does not relieve the prolonged expiratory phase which is prevalent in all true cases of bronchial asthma.

Having administered the drug of choice, which is usually adrenalin hydrochloride, the physician now prepares a room for the patient, whether it be at home or in hospital. He must always supervise the preparation himself. The room should be freed of all rugs, carpets, draperies, feathers, clothing out of the closets, woolen blankets and other articles not essential to the well-being of the patient. The room should be very bare with just a bed, table, and the necessary bed clothing which should be made from cotton. If allergen-proof encasings are not available, one should cover the mattress with several plain sheets. If kapok pillows are not available, one should use cotton blankets or cotton quilts instead of pillows or he may use allergen-proof encasings if they are available. All dust should be removed from the room before the bed is prepared. The only other furniture in the room should be a non-upholstered chair for the attendant. Air conditioning[2] is desirable if it is available and, if not available, one should close all windows with the exception of one which should be opened not more than 12 inches from the bottom. Wet towels should be kept over this opening.

The patient is then moved to this room, with every possible effort to avoid contact with individuals using cosmetics. Visitors, excepting immediate members of the family, are forbidden access to the room and all members of the family are instructed to wear cotton or rayon clothing and not to use cosmetics of any type when entering the room.

The possibility of ingested allergens must be considered and it is usually advisable to give a large dose of magnesium sulphate. Then, to avoid further intake of foods that are likely to produce an asthmatic attack, one should adopt one of Rowe's elimination diets[3].

RESULTS OF TREATMENT IN 244 FOLLOW-UP CASES

TABLE I

IMPROVEMENT ACCORDING TO AGE OF ONSET, SHOWN IN PER CENT

Age of Onset	No.	95%—100%		75% — 95%		50%—75%		25% — 50%		0 — 25%		Dead	
		M	F	M	F	M	F	M	F	M	F	M	F
0- 4	88	16	20	31	15	5	1						1
5- 9	27	8	4	8	5	2						1	
10-14	11	1	3	3	2		1		1				1
15-19	9	2	3		3		1						
20-24	30	4	5	9	9	2	1						
25-29	18	1	4	4	5	2			2				1
30-34	18	1	3	3	6	1	4						
35-39	14		5		6			1	1	1		1	
40-44	11	1	3	2	2		3						
45-49	3	1			1					1			
50-54	6	1	2		1	2							1
55-59	4				2		1			1		1	
60-64	4		1	1		1					1		
65-69	1			1									
70 & Over	0												
Totals	244	36	53	62	57	15	12	1	4	3	1	3	4

TABLE II
IMPROVEMENT ACCORDING TO DURATION AT TIME OF EXAMINATION, SHOWN IN PER CENT

Duration at time of Exam	No.	95%—100%		75% — 95%		50%—75%		25% — 50%		0 — 25%		Dead	
		M	F	M	F	M	F	M	F	M	F	M	F
Under 1 yr.	32	6	6	6	10	1	2			1			
2 yrs	23	6	6	4	5		1		1			1	
3 yrs	17	2	3	3	5	2	1			1		2	1
4 yrs	14	1	2	4	2	1	1	1	1	1			
5 yrs	18	5	3	4	3	3							
6 yrs	15	4	4	4	1	1	1						1
7 yrs	20	2	6	5	6				1				1
8 yrs	10	1	1	3	4	1							
9 yrs	14	2	3	3	5	1							
10 yrs	18		4	5	7	2							
11 yrs	5	1		3	1								
12 yrs	3	1		1			1						1
13 yrs	3		1		2								
14 yrs	0												
15 yrs	4	1	1	2									
16 yrs	3		2	1									
17 yrs	6	1			3	1	1						
18 yrs	2			1	1								
19 yrs	3			1	1		1						
20 yrs	14	2	2	3	4	2	1						
21 yrs	3		1	1			1						
22 yrs	1			1									
23 yrs	1								1				
24 yrs	1		1										
25 yrs & up	14	1	2	7	2	1	1						
Totals	244	36	48	62	62	16	12	1	4	3		3	4

The above mentioned procedures will relieve over 98 per cent of acute attacks of asthma within a relatively short time. There is an occasional case, probably due to ingested foods, that is not relieved promptly.

DIAGNOSTIC MEASURES FOLLOWING THE ACUTE ATTACK

1. A very careful history should be taken, not only considering allergy but other physical abnormalities such as hypothyroidism, sinus infection, gallbladder disease, chronic appendicitis, pelvic disturbances, rectal disturbances, and other conditions that might disturb the well-being of the patient.

2. The physical examination should be thorough and complete.

3. Skin-testing should be done by the scratch and intracutaneous methods and, if necessary, by the passive transfer method. These methods

will usually reveal the source of trouble if an adequate number of tests are used and reliable extracts are employed.

4. Elimination diets[3], based on the principles elucidated by Rowe, may have to be employed.

5. A leukopenic index[4] determination is occasionally necessary to find the offending substance.

6. One should always do essential laboratory examinations consisting of red cell count, white cell count, hemoglobin determination, differential count, blood calcium, blood phosphorous, Wassermann, urine examination, and, in special cases basal-metabolic rate, stool examination and often it is necessary to do various types of blood chemistry and special studies of the red blood cells.

I have presented the results of treatment of 244 asthmatic patients who have been followed over a period varying from one year to four years. I have purposely omitted extrinsic and intrinsic factors, because I have as yet to see a case of asthma caused primarily by extrinsic factors. I have seen one case of hay fever that was perhaps caused by extrinsic factors alone.

One will notice, from Table I, that the onset of asthma is usually early in life and that the prognosis is better if the onset is early, which agrees with Unger's[5] findings. In Table II, it will be noticed that the duration of the disease is also a deciding factor in the prognosis of the case. However, there is one other factor that has not been mentioned in this discussion and which is more important than the duration of the disease and that is, infection and polyposis of the nasal mucous membranes and nasal sinuses.

SUMMARY AND CONCLUSIONS

1. A brief discussion of the treatment of an acute attack of bronchial asthma has been presented.

2. A brief discussion of the diagnosis of the cause of bronchial asthma has been presented.

3. A summary of 244 cases of bronchial asthma has been presented which reveals that the earlier the onset of asthma, the better the prognosis, and the sooner an examination is conducted after the onset, the better the prognosis.

BIBLIOGRAPHY

1. Cromp, A. J.: Hay fever and asthma quackery, Hygeia, 7:590, 1929.

2. Criep, L. H., and Green, M. A.: Air cleaning as an aid in the treatment of hay fever and bronchial asthma, J. Allergy, 7:120, 1936.

3. Rowe, Albert H.: Revised "elimination diets" for the diagnosis and treatment of food allergy, J. Digest. Dis. & Nutrition, 1:387, 1934.

4. Vaughan, Warren T.: Food allergens, III. The leukopenic index, preliminary report, J. Allergy, 5:601, 1934.

5. Unger, Leon: Bronchial asthma: results of treatment in 207 patients under observation for a period varying from one to thirteen years, J. Allergy, 7:364, 1936.

DISCUSSION

Dr. S. J. Couvillon (Moreauville): Since boyhood, I have had perennial hay fever attacks, coming twice a year and sometimes oftener. Very little relief have I ever received from those attacks and they just had to wear off. The last but most violent attack was June 1, 1936. The case was for the first time complicated with bronchial asthma and angioneurotic edema, affecting my hands and feet. The attacks were worse at night. I could not breathe. I did not know exactly what I had until I called physicians in to see me. All organic troubles were eliminated and the case really was one of a genuine form of allergic disturbance. I was advised by my physicians that in taking a vacation to go to Oklahoma City and have my allergic state thoroughly studied. I stayed there three days and innumerable tests were made for foods, plants, trees, domestic articles, animals and the like. After a thorough analysis, I was found to be sensitive to house dust, orris root, Bermuda and blue grass from the viewpoint of pollens, while among foods, I reacted to iced tea, cucumbers, radishes, American cheese, navy beans, all sea and shell foods, bananas, pecans and nuts of all kinds. I was found to be sensitive, too, to feathers and the doctor supplied me with a storck rubber pillow cover with a "zip". Likewise, I have been regularly furnished with products against the dust, orris root, and the grasses to be introduced weekly.

I was also restricted to a proper diet, eliminating all sensitive foods, which I am happy to say I am carrying out intelligently. I have not had an attack of hay fever or asthma since. I noted in your remarks that you mentioned neosynephrin. I wish to state that this is a drug "par excellence" by dropping in the nostrils every morning, followed by a warm breakfast. It has a marked effect in draining infected sinuses which are invariably infected in chronic hay fever patients. My mother was a chronic hay fever asthmatic,

so much so that she developed emphysema of the lungs when quite young and later died of pneumonia in her late sixties. Very little relief could be obtained for her in those days and much less a cure.

I am just mentioning my case which may be of some interest to you and to the profession. Since I am so well, I am very much encouraged, although in a way discouraged since you mentioned that asthmatics do not get well, that is, they are never cured. Positively, I have never felt as well in all my life. I believe that hay fever asthmatics can be held in check when all measures instituted are well placed, and what I wish to emphasize is that no attempts to treat hay fever asthmatics or bronchial asthma should be undertaken unless the patient's allergic state is tested by competent experts in that field of medicine. Pollens, foods and substances which affect a certain group of asthmatics, may not affect another group presenting identical symptoms and while palliative measures must be used to control acute attacks, yet to attain a relief of any permanency, one's allergy has to be known to determine the real causative factors.

Dr. O. A. Eaddy (Keithville): I would like to say a few words about this subject. The first thing I want to mention is a remedy for an overdose of adrenalin. Probably Dr. Browning will tell you, but if he does not I want to mention this: I think it is a bad idea to instruct patients to do so, but doctors sometimes vary from the rule and have their patients administer drugs to themselves, especially adrenalin. That is a very dangerous procedure, especially in older people and people with high blood pressure. However, in case you should give them an overdose, one of the best things you can do is to imagine you have given them a dose of snake poison and put a tourniquet tightly over the site of the injection. Put the injection not too close to the shoulder, but three or four inches above the elbow and on the back of the arm, where you can have room to put that tourniquet on, if needed.

Last summer, on account of urticaria, I had been taking adrenalin. The last injection I took nearly killed me although I had taken just three minims. I thought of Dr. Browning's suggestion of the band. I had one in my pocket, and I put that band on and I think it saved my life. Instead of giving adrenalin in the abdomen, or some place where the band cannot be placed around so well, put it in the arm where the absorption may be stopped in a minute.

I am reluctant to mention any proprietary drug; I do not think it should be called a patent medicine, but on the market is a preparation called felsol. The preparation is put up in powders marked "felsol," and some are unmarked; one may buy or prescribe either. I have found felsol a safe drug to give where the patient has to administer it himself. If you prescribe it, be sure to write felsol powder because if you do not it may be dispensed as feosol tablets, a different preparation. I do not recall just what it is; it is not expensive,—costs about seventy-five cents for fifteen powders. I have used it in a number of cases, with good results.

Dr. Robert Bernhard (New Orleans): I should like to ask the doctor just what his experience, if he has had any, has been with lipiodol in the treatment of asthma.

I have used lipiodol in those cases of bronchial asthma when everything else within the domain of science had been tried; autogenous vaccination, clearing up of the upper respiratory tract, clearing up the gastrointestinal tract, and so on, with practically no progress whatsoever. In these cases I have used lipiodol, and the results have been absolutely amazing. I am not talking about cases of bronchial asthma where there are emphysematous changes, where the lung tissue has lost its elasticity, where the air sacks are broken down and where bronchiectasis is beginning to form, and so on. I am referring to true bronchial asthma.

This past winter I treated thirteen cases, ten cases of which were absolutely symptomatically cured. One lady, who has had asthma for seventeen years, told me just about five weeks ago that this has been the first winter in seventeen years she has been able to lie down and sleep the entire night without the administration of adrenalin or some of the other antispasmodics.

I have seen it in other cases, as I say, ten out of thirteen. In my opinion, an infinite amount of good can be done with the administration of lipiodol in bronchial asthma.

Dr. W. H. Browning (In closing): The prognosis for asthmatics is relatively good when properly handled, as indicated by the charts in this paper.

The foods mentioned are frequent causes of asthma. Bermuda grass is a frequent offender and, in Louisiana, may produce symptoms from early spring to late fall, because of its long pollinating season here. House dust is the most frequent cause of asthma in this vicinity.

Felsol will certainly give relief to an occasional case of asthma. So will the "asthma cures" mentioned in the paper, but such plans of treatment are usually unsatisfactory and should not be recommended routinely.

Lipiodol has been used in a rather large series of cases, as yet not published, and I am of the

opinion that it is of value only in the cases that have bronchiectasis.

Dr. Bernhard: Did you read Anderson's article, of the University of Pennsylvania, with 450 cases, and most appalling results?

Dr. Browning: I have read the article referred to, but I am quite sure that I will not be able to duplicate the results reported.

INFECTIONS OF THE MIDDLE EAR*

JOHN T. CREBBIN, M. D.
SHREVEPORT, LA.

When one remembers the economic loss and the embarrassment to the patient following an infection of the middle ear, one can then appreciate the importance of conserving the hearing and health of every patient suffering with a middle ear infection.

This disease affects the infant and the aged alike. True, infants and children are more predisposed to these infections. Nevertheless, they are no respector of age or of person.

There are the acute and the chronic types of middle ear infections. One should bear in mind that the acute may merge into the chronic type in a short time. The exciting causes of the acute types are influenza, tonsillitis, scarlet fever, measles, hypertrophied pharyngeal tonsils, pus in the nose from infected sinuses, bathing in public baths, in fact, any febrile infection may be the cause.

Investigation has shown that the infection may enter the tympanic cavity through the lymph channels and the blood vessels. In the vast majority of cases infection is the result of a common cold.

It is true that otitis media is more frequently found in undernourished children and where the hygienic surroundings are not of the best, and unfortunately one attack predisposes to another attack.

It is probably true, as Turner points out, that gastro-enteritis and its consequent malnutritions are primarily a favorable infection of the middle ear. On the other hand there is also a close connection between acute pulmonary conditions, especially bronchopneumonia and otitis media. Autopsies have shown 90 per cent infections of the middle ear in these cases.

Some authorities hold that a mild otitis media is almost universal in infants, owing to the fact that the embryonic tissue may readily become infected because it may persist in the middle ear cavity after birth, but as a rule this tissue disappears within the first few weeks of life. During the first two years aural suppuration is more frequent than at any subsequent age, and even at five years of age it is found in 2 per cent of all children. Otitis media is the most frequently overlooked infection of infancy and childhood, for the child may not even complain of earache.

ANATOMY

A study of middle ear infections with all of its complications is facilitated by a knowledge of the anatomy of the temporal bone, which is best found in the infant's skull. At this time it differs in many respects from that of the adult. At birth, and for many months thereafter, it consists of three distinct parts, which can be readily separated from each other. These are the squamozygomatic, the tympanic and the petro-mastoid. At this period in life these principal parts are held together by a connective tissue which ossifies slowly, so that as a rule, the connection between them is very imperfect at the end of the first year.

The most important parts of the auditory organ are located in the petrous bone. An external inspection of its surface reveals many characteristics, which are of the greatest importance to the otolaryngologist. The temporal bone is traversed by many large and small canals, and these are situated chiefly in the petrous and mastoid portion. The lining of the tympanic cavity and mastoid cells is really a continuation of the mucous membrane of the eustachian tube, but it is more delicate. In the vast majority of cases of purulent otitis media, the infection finds entrance through the eustachian tube. Fortunately the small caliber of the tube and the opposing ciliated epithelium movement tends to prevent the entrance of bacteria.

***Scheduled to have been read before the Louisiana State Medical Society, Monroe, April 28, 1937.**

SYMPTOMS

The onset may be sudden, or it may be a slow process. One should bear in mind that as a rule there is no sharp demarcation between a middle ear infection and a mastoid infection. Consequently, this disease should be considered as one and treated as a single infection, and we should not dissociate the vomiting of children and a middle ear infection, for frequently they co-exist. Furthermore, the borderline between an attack of acute catarrhal otitis and an attack of acute suppurative otitis is very indefinite. The deciding factor depends on the type and virulence of the invading organism, also the resistance of the patient and the anatomic peculiarities of the patient as well.

Earache is the most common symptom in acute middle ear infections. There is usually tenderness over the mastoid antrum and tip. The pain is caused by air or liquid under pressure. Deafness may be present. If the patient is a child, he may be restless and roll the head from side to side, and as a rule will pull at the affected ear. There is loss of appetite and sleep. Temperature is variable, and is not a dependable sign. Convulsions and meningitis may be present from the onset. It seems unnecessary to add that it is a safe rule always to examine a child's ears, irrespective of the illness.

The appearance of the tympanic membrane is characteristic, but this changes in appearance with the progress of infection. Usually there is some enlargement of the blood vessels. These vessels lie around the periphery of the tympanum and extend inferiorly and posteriorly to the handle of the malleus. There is a lack of luster to the membrane and loss of light reflex. There is usually more or less bulging and redness. However, it is well to remember that at times there may be a grey instead of a red appearance of the membrane.

TREATMENT

A patient showing these symptoms should have a myringotomy as soon as possible. In the event a small perforation has occurred this should be enlarged. It is poor surgical technic to procrastinate in these cases. An early myringotomy performed under strict surgical surroundings is generally accepted as a safe procedure. Surely a myringotomy is preferable to waiting until a perforation has taken place. Especially is this true, when it is remembered that invariably this means a long drawn out treatment, more scar tissue when healing finally takes place, and greater loss of hearing. An early myringotomy may mean the difference between a cured patient and one who may require a mastoidectomy later.

It is true that a myringotomy will not cure all patients, for further treatment is ordinarily necessary, and even a mastoidectomy may finally be indicated. It seems unnecessary to add that when possible these cases should be hospitalized from the onset of the infection. The reasons are obvious. A liquid diet, with an abundance of fruit juices, and sunshine are indicated. Carotene in oil and cod liver oil preparations are of great help.

A hematologic study and repeated roentgenograms of each case should be made, for this is the only method whereby a true picture may be obtained. Meningitis and serious thrombosis may be shown by so doing. As a matter of fact it should be routine practice to examine a smear of the aural discharge following a myringotomy, a mastoidectomy, and during the progress of the disease.

The micro-organism most frequently found is the streptococcus in one of its varieties. Next in frequency are the pneumococcus and the staphylococcus, and a less frequent organism is the pneumobacillus.

Tanaka and others find vaccine therapy very effective. The operator should take a swab of the pus following a myringotomy or from the cavity following a mastoidectomy. This vaccine should be prepared and used if there is delay in the cessation of the aural discharge or delay in healing of the wound.

Vaccines are more effective if autogenous, freshly prepared and started in small doses. Reaction must be watched and avoided by making the succeeding injections without any increase in amount. Doses should rarely exceed 0.5 c.c. and should be given weekly. They are of greater value when made from hemolytic cocci. My own experience in the use of autogenous or stock vaccines has not been encouraging.

You are perfectly familiar with the usual

treatment of an acute suppurative otitis media. However, I feel justified in urging that the dry method of treating be followed in all of the cases. Prontylin and prontosil, as well as insulin are being used in these cases, but it is too early to form an opinion or for me even to prognosticate, although I have had encouraging results with prontylin and prontosil.

An adenectomy and tonsillectomy should be done as soon as the acute symptoms have passed.

There can be no hard and fast rule to follow regarding the time when a mastoidectomy is indicated, especially when it is remembered that the tempertaure is not a safe guide. A thorough conservative treatment is always indicated in an acute suppurative otitis media. If there is no improvement after a reasonable time, a mastoidectomy is indicated. This is true in children, especially when the onset has been sudden and when the symptoms are of a violent nature. This type is usually a Streptococcus pyogenes infection, and demands an early mastoidectomy. I am of the opinion that much valuable time is lost, the life of the patient is jeopardized and the after treatment is considerably prolonged by unnecessary delay in operating.

A preliminary transfusion is indicated, especially if the patient is a very sick child or in a weakened condition. Following a mastoidectomy, transfusions from different donors will materially shorten the duration of the disease and hasten the recovery of the patient. Arc-light and small fractional roentgen ray doses sometimes are found beneficial in cases which do not respond after an operation.

Any patient with chronic middle ear suppuration is potentially in danger of his life. This is true when we recall the intracranial complications which may occur, as meningitis, postauricular swelling, purulent labyrinthitis, facial paralysis, petrositis and other complications.

The choice of anesthesia is of great importance. Infants and young children should be given a general anesthetic, whereas young adults and adults should have a local anesthetic.

It seems unnecessary to enumerate the advantages of practically no complications at the time of operation; a bloodless field, less shock following the operation and no fear of ether pneumonia, no nausea, less pain and the stay in the hospital is materially shortened. Furthermore, the patient is able to resume his occupation within one half the usual time required under a general anesthetic.

I was convinced long ago that the pain suffered by all patients who have had a mastoidectomy was out of proportion to the suffering of patients who have had abdominal and other operations. Investigation convinced me that this was due to the necessary tight bandage which is used. I devised the simple bandage

Figure 1. Dressings have been applied; held in place by a one inch adhesive.

which is illustrated. I recommend the use of this type of bandage with the assurance that the gratitude of patients will be sufficient justification.

Quite a while back chronic suppurative otitis media was treated with some form of an iodine and boracic acid powder, but for some unknown reason this fell into disuse. Within the last ten or more years the iodine and boracic powders are being used again with encouraging success.

Figure 2. Three by five inch dressing covering is then applied; held in place by adhesive.

This method usually necessitates seeing the patient daily.

ZINC IONIZATION

I have had most satisfactory results in using the Miller zinc ionization machine in cases which do not respond to the usual accepted treatment in chronic suppurative otitis. However, it should be borne in mind that the Miller outfit can be used with just as encouraging results, in acute suppurative otitis media. The following cases will illustrate its use.

CASE REPORTS

Case 1. John, aged 7, was first seen on April 2, 1928. At three years of age, he had a severe attach of grippe and both ears have discharged since. The tonsils and adenoids were removed following the attack of grippe, with no improvement. The ears were thoroughly cleansed. One ear received a four milliamperes of the zinc ionization for ten minutes. Ten days thereafter the other was treated likewise. Each ear received three separate treatments. Recently word was received from the family advising that neither ear has discharged following the treatment. Naturally, there was no improvement of hearing.

Case 2. E. C., aged 7, was first seen April 8, 1928. An attack of smallpox at seventeen months of age, left her with a painful and persistent discharge from both ears. Tonsils and adenoids were removed at the age of five years. No improvement. Each ear received two zinc ionization treatments at ten alternate day intervals. There was a cessation of the discharge from both ears. During July 1929 she developed an attack of measles, both ears again discharged and were treated once with the above method. Recent investigation shows that although there has been no improvement in her hearing, there has been no discharge from either ear for over nine years.

Case 3. Mrs. M., aged 45, was first seen in May, 1934. Both ears have discharged since babyhood, but no history could be obtained of the original cause. The tonsils were removed some years ago with no improvement. There never has been any sense of smell. Examination showed both drum membranes destroyed. This patient received eleven alternate treatments every ten days of zinc ionization. She has had no further discharge from either ear, and although I doubt it, she claims to be able to differentiate some odors.

SUMMARY

The management of infection of the middle ear is discussed from a point of view of symptoms, anatomy and treatment. Excellent results have been obtained with zinc ionization and three case reports are appended to show the value of this treatment.

DISCUSSION

Dr. George J. Taquino (New Orleans): I am indeed grateful for this opportunity to discuss the contribution of Dr. Crebbin, and to extend appreciation for the information he has just persented to us.

Infections of the middle ear may rightfully be considered by far the most important of all ear lesions, not only from the standpoint of occurrence, as they are the most common type of acute ear diseases, but also for the complications and sequelae which may result from the primary infection. The infection is acquired by way of the eustachian tube, whether from the nose, sinuses, or hypertrophied pharyngeal tonsils, which are the foci in a majority of cases. Where the tonsils and adenoids have been removed, 60 per cent of all middle ear infections are found to be due to sinus infection, and in some instances may be attributed to the fact that the adenoids have not been completely removed, and the small remaining portion may harbor infection. All middle ear infections are potential mastoids, but less than one per cent of my cases resolve as such.

Otitis media is frequently found in infants and small children and deserves much consideration

from our standpoint as well as by the pediatrician, who may aid immeasurably in an early diagnosis. The condition may be difficult to recognize, because frequently the infant presents a typical case of acute intestinal intoxication, with vomiting, diarrhea, and varying degrees of dehydration, but statistics show that in a great number of these cases, acute suppurative otitis media or mastoiditis is present. It is, therefore, a good plan routinely to examine the ear drums of all sick infants.

A hematologic study and roentgenograms of cases should be made as well as the routine examination of aural discharge. Another procedure which it is well to recommend is that at the time of the first roentgen ray of a patient for mastoids, a key plate should be made of the petrous pyramid, because, if after the operation another roentgen ray is made, the amount of involvement may be determined as compared with the previous condition.

Among the clinical symptoms there may be a thrombosis of the smaller veins, or a thrombosis of the vessels that perforate the haversian canals. The process then may become progressively serious, for they may pierce the dura, empty into the veins of the dura, which in turn empty into the superior longitudinal sinus, into the sigmoid lateral sinus, jugular bulb and vein, vena cava, pulmonary artery, pulmonary veins, and thence through the aorta into the distal circulation, where foci of infection may be deposited anywhere in the body. Therefore, in the presence of grave thrombosis, septicemia may eventuate, but it is possible to have septicemia without complete thrombosis of the lateral sinuses.

Dean, of St. Louis, at a recent round table discussion, in New Orleans, of hemolytic streptococcal infections, advocated the use of prontosil and prontylin, citing his experiences in which there was a clearing up of the septicemia without surgical intervention or ligation of the jugulars. These chemotherapeutic substances, the possibilities of which were envisioned through Ehrlich's conception of and untiring efforts toward conquering disease by chemotherapy, have been experimented upon extensively abroad and in the United States with encouraging results. Among the more recent reports are those of Foulis and Barr, in England, and Long and Bliss, in this country, in which the conclusion has been reached that we are justified in using this dye and its derivatives in streptococcal infections; consequently, it might be indicated in nasal, post-nasal, and throat involvements of hemolytic streptococcal origin, including septic sore throat, otitis media and mastoiditis. I have had success in the use of prontosil and prontylin.

With regard to other forms of treatment, it has been my experience that irrigation and washings only prolong the cure, and I use the dry method. Repeated ionizations may be necessary, and in some instances of chronic otitis media and suppurative or purulent otitis media, ionization is of value. Transfusions when indicated are of benefit in patients who are very toxic, and of course especially in septicemias. Dr. Granger recommends small fractional doses of roentgen ray in the belief that they are sometimes helpful, and feels that in some instances they have aborted cases of mastoiditis.

The choice of anesthetic depends upon the preference of the operator. I use very few local anesthetics, although I have done them satisfactorily, but I believe there is less shock attached to the use of a general anesthetic. A gas anesthetic is my choice, ethylene and oxygen. In sixty odd cases of mastoiditis in the presence of pneumonia, an ethylene and oxygen anesthetic was used, and, with hardly an exception, the patients left the table in better shape than they were prior to the operation. There was not one fatality in this group.

Dr. P. L. Perot (Monroe): Dr. Crebbin has so thoroughly covered the subject of diseases of the middle ear, that I will only call your attention to the few anatomic facts in connection with infection of the middle ear.

I know of no other space in the human body where so many important structures so closely approximate each other as in the middle ear of the temporal bone.

The eustachian tube in early life is large, short, and more in a straight line. Very frequently pus can be seen draining into the nasopharynx from the eustachian tube.

The mucous membrane of the mastoid cells, middle ear and eustachian tube is direct continuation of the mucous membrane of the nasopharynx. Therefore, the middle ear naturally shares the inflammatory processes to which the nose and throat are subject. The middle ear may be classed as one of the accessory cavities of the nose, and conversely the nose and nasopharynx are a vestibule to the ear, and must be studied and treated if we are to do our duty in relieving ear infections.

It must be borne in mind the analogy of the tubotympanum and the upper respiratory tract. In these diseases the bacteria exhibit the inherent selective action in determining the type of tissue they are prone to attack, and find similar tissue in the lungs and middle ear.

Dr. A. L. Peters (Monroe): I want to commend Dr. Crebbin on this wonderful paper and the way in which he has presented it, and further stress the importance of reflex cough in diagnosis

of ear infections. We have only to remember how often a patient will cough when inserting a speculum or applying treatment to the external ear, to appreciate the importance of this symptom in diagnosing a middle ear infection. I have recently seen two cases of persistent cough clear up by directing treatment through the middle ear.

In reference to zinc ionization, the cases must be classified as to location of the infection, size and position of the opening in tympanic membrane. Please note that the essayist states that in his cases, the tympanic membrane was practically destroyed. It is this type of case and where the infection is in the middle ear that results are obtained from zinc ionization.

Should much be expected in the other type of cases, for example where the infection is high up in the attic and the perforation is in the antero-inferior portion of the drum head?

Following a catarrhal infection in the nose, attention should be directed to the nose and eustachian tube, and unless the foci of infection can be eliminated, not much will be gained by the treatment. Where the perforation is in Shrapnell's membrane and very small, it is impossible to reach the infected area by ordinary methods of treatment and it is in this type of case that one must resort to surgical procedure.

THE ROLE OF THE ORTHOPEDIC SURGEON IN THE TREATMENT OF ARTHRITIS*

ROBERT B. OSGOOD, M. D.
BOSTON, MASS.

INTRODUCTION

As the title suggests, I believe there is still a role to be played in the treatment of chronic arthritis by medical men who devote special attention to the lesions and diseases affecting the bones and joints. I have used the word "still" because those of us who have been toiling for many years have faith in a promised time when the prodromes of at least the more crippling forms will be recognized by all general practitioners, taken seriously and treated intelligently. Then we may hope that irreparable joint damage will in truth be prevented. When this happy time comes, the orthopedic surgeon will have no role to play. The essentials of successful treatment will have become common knowledge and the whole will be recognized, as indeed it should be, as greater than any of its parts. The orthopedic surgeon should look upon such a loss of a part of his own soul as a reward and seek to make good this loss by intensive cultivation of other fallow fields of bone and joint pathology, the acreage of which is still large. Ideally, a specialist should be like Kipling's explorer who

> "Plotted sites of future cities; traced the easy grades between 'em,
> Watched unharnessed rapids wasting fifty thousand head an hour:
> Counted leagues of water frontage through the axe-ripe woods that screened 'em;
> Saw a plant to feed a people, up and waiting for the power."

Alas, the happy time we glimpse has not arrived and until it does we are convinced that from the moment when joint symptoms appear, up to the time when they disappear, the orthopedic surgeon has a role to play in the management of chronic arthritis.

THE INCIDENCE OF CHRONIC DISEASE

As far as I am aware, Massachusetts is the only state which has attempted to estimate with some degree of accuracy the incidence of chronic disease among its population. In 1929, Richard Conant†, the then Commissioner of Public Welfare in the State of Massachusetts, said that "in the long run the greatest single cause of poverty is chronic illness." This social aspect will be to many of you surprising, and to all of us sobering. In the "Report of the Special Commission to Study and Investigate Public Health Laws and Policies"** in the State of Massachusetts which was published in December, 1936, under the Section of Adult Hygiene and Special Diseases appears the following sentence: "The conviction is today more general that purely environmental and preventive services must be expanded to include a study of those chronic diseases which have been found to be physically, economically and socially disabling to an alarmingly large

---

*Presented before the First New Orleans Graduate Medical Assembly, March 9, 1937.

†"The Commonwealth," Vol. 16, No. 4, Oct.. Nov., Dec., 1929.

**Report of the Special Commission to Study and Investigate Public Health Laws and Policies. P. 174 Dec. 2, 1936. (State Department of Public Health, State House, Boston, Mass.)

proportion of the adult population in Massachusetts (about 30 per cent of those over forty years of age)". More than a quarter of the population of Massachusetts over forty years of age has some potentially or actually disabling chronic disease. The situation becomes more startling when it is considered that seventy years ago only 13.2 per cent of the population in Massachusetts was over fifty years of age and that in 1930, 20.4 per cent was over fifty. In 1870, there were seven productive adults to care for one non-productive; in 1930, there were only 5.4 productives to care for every non-productive.

I thought it important to digress for a moment from the diseases I am considering, reminding you once again that "the whole is greater than any of its parts," to the end that you may realize the enormity of the problem which chronic disease presents throughout our country and probably in every other country also as the age limit of life increases. Its solution should be earnestly sought on every humane ground. Moreover, chronic disease is biting into the purse of every tax-payer today and threatens to bite deeper tomorrow.

CHRONIC RHEUMATIC DISEASE

Returning to the subject of this address, it remains only to visualize for you how large a part of this problem of chronic disease is associated with chronic rheumatism. Turning again to the Report of the Massachusetts Special Commission, it is found that the diseases of the heart and circulatory system affect the largest number of people, and that the chronic rheumatic diseases are a close second. In Massachusetts there are over three times as many cases affected by chronic rheumatism as the sum total of those affected by tuberculosis, cancer and diabetes. When we consider that "Rheumatism cripples in the largest number and kills in the smallest," we are forced to conclude in the words of the Report that "this ability to cripple without killing, would seem to put it in the lead of all other chronic diseases as to pre-eminent social, economic and medical importance."

Similar conditions of incidence are believed to exist throughout the north and south temperate zones of the world, from South Africa to Nova Scotia. It is seemingly almost absent in the tropics and in the polar regions. I sincerely hope it is less acute in warm and genial Louisiana than in chilly and reserved Massachusetts. Interest in the subject is growing rapidly. The Ligue Internationale Contre le Rhumatisme was organized in Europe several years ago and there are national committees of this league in practically all the Continental countries, in the British Isles and in the United States. The American Association for the Study and Control of the Rheumatic Diseases is "going strong" and seeking both professional and public support.

THE TWO GREAT CLASSES OF CHRONIC ARTHRITIS AND THEIR ETIOLOGICAL FACTORS

Atrophic, Rheumatoid, Proliferative Type. The atrophic, rheumatoid or proliferative type is clearly a generalized disease, the most prominent symptoms of which appear in the joints. If the disease goes on unchecked, ankylosis of the affected joints is the end result. Despite the striking nature of the joint symptoms, the examination of the tissues and fluids within the joints of the atrophic type thus far has not revealed the exact nature of the underlying disease. One of the earliest signs is proliferation of the synovial membrane and hence Nichols and Richardson called it the proliferative type. The tissues comprising a joint mechanism react in a very similar manner to many different bacterial and chemical irritants and to subtle changes in the circulation. Occasionally cultures of joint tissues and fluids will show growths, but by no means always of the same type of organism, and yet the appearance of the joint and the joint symptoms, i. e., the joint reaction, may be almost the same. To put it in another way, different organisms may give similar reactions. Cultures from the joints of the atrophic, rheumatoid, proliferative type more often are successful than those from the joints of the hypertrophic. osteoarthritic, degenerative joints. Most careful investigators, however, obtain growths from atrophic joints very rarely indeed and practically never from the joints of the hypertrophic type. Seemingly, we must look elsewhere than in the joints for the most likely initial causes of both great classes of chronic arthritis.

It has been found that the atrophic, rheumatoid, proliferative type, which as we have seen may begin at an early or late age, but most commonly in the middle decades, has a higher incidence in women than in men. In both sexes it affects more often those of a slender asthenic body type than those of a stocky sthenic configuration. It may follow in the train of dysentery, pneumonia, Neisserian infection, rheumatic fever and after it has been well pronounced for many months or years its victims' sera almost always will agglutinate to high titer strains of hemolytic streptococci. The association with this group of cocci is clear, but the significance of this association is still indeterminate and awaits elucidation.

One must go much further back than the joints themselves in a search for background causes and unless this is done, treatment is likely to be followed by little benefit to the majority of patients. A remark of Haldane may be applicable: "We are unlikely to succeed along Pasteur's lines." Heredity, fatigue, nervous shock or depression, faulty body mechanics, circulatory disturbances, imperfect alimentation, food and vitamin deficiences, endocrine dysfunction, foci of infection in other parts of the body—these are some of the remote etiologic factors which may prepare the ground for a harvest of arthritis. These statements are my own, but I think I may say that these same convictions are held in a general way by many earnest men whose labor in the fields of arthritis has been long and whose results have been rewarding.

Hypertrophic, Osteoarthritic, Degenerative Type. I believe that the hypertrophic, osteoarthritic, degenerative type is also a generalized disease or perhaps it might be said, a generalized tendency as well as a local joint derangement. The unchecked disease does not as a rule end in bony ankylosis as the atrophic type frequently does; the eburnated articular surfaces do not solidly unite, and fibrous adhesions bridging the joint space are not commonly found. In the spine opposing and impinging exostoses arising from the vertebral bodies' superior and inferior edges may eventually build bridges of bone spanning the intervertebral spaces, but in such a case it is the exostoses themselves that coalesce and not the contiguous articular surfaces.

The articular ends become much misshapen both by overgrowths and by degenerative changes so that full ranges of joint motion are prevented and even slight amounts of joint motion may be painful, especially in a ball and socket joint like the hip. In joints with a wide range of motion any limitation of its normal arc is always more painful than in a joint which normally moves only through a small arc.

The examination of the tissues within the joints of the hypertrophic type will afford a fairly typical picture which in general is that of degeneration, hence the name degenerative arthritis first applied by Nichols and Richardson. The joint tissue first affected by this process seems to be the articular cartilage. There is practically nothing macroscopically or microscopically (unless such a joint has been recently subjected to trauma) to suggest that infection has played any part in the changes which have taken place. As I have said, cultures from both joint tissues and fluids of the hypertrophic type have been, when carefully taken, almost universally sterile, nor do these patients' sera, except in rarest instances, agglutinate strains of hemolytic streptococci.

This type of chronic arthritis is never seen in children and unless a single joint has been excessively traumatized by over-use or injury, it does not appear as a subjectively symptomatic disease until the later decades of life. Bauer has shown, however, that in certain knee joints coming to operation for other causes as early as thirty years of age, one may appreciate degenerative changes beginning in this marvelous, almost inert, tissue articular cartilage although the patient has been quite unaware of their presence and will continue to be unaware for another decade. I know of no sufficiently reliable statistics which prove that the incidence of the disease varies greatly in women or in men, but it quite as often affects the stocky, sthenic type, who tend to be overweight, as the slender, ptotic type.

Do degenerative changes associated with premature or normal ageing processes and trauma completely explain the basic nature of chronic hypertrophic arthritis? Some of us feel that

they may not. If they do, why may the onset of Heberden's nodes be quite sudden, as they sometimes are, without change of occupation? Why are they almost as common in the left hand as the right in right handed persons? Why is one hip joint so commonly affected in malum coxae senilis and the other spared? Why do the feet so often escape the disease? These are some of the questions needing answers. Moreover, although age advances progressively the disease by no means always progresses either synchronously or regularly. It seems often to be arrested with the increase of years.

I prefer to believe that very possibly there are other factors than mere senescent degeneration and micro or macro trauma to account for the symptom complex. There are still wise internists who are convinced that arteriosclerosis may be checked by treatment and there are a few enthusiasts left among the dermatologists who conscientiously accept fees for preventing a tendency to bald heads. My impression is strong that other possible etiologic factors may be overweight, diets which are not optimum for the individual, faulty elimination, endocrine deficiencies or disturbances, mental and physical fatigue, diminished local joint circulation, occupational trauma. It behooves us, I believe, to take cognizance of these factors rather than to take the almost defeatist attitude, that our own indiscretions or the hand of the Lord has condemned us to premature or normal senescence and "that's all there is about it."

GENERAL TREATMENT

The treatment of chronic arthritis should begin with a leisurely review of the patient's mental and physical past and present life. It should end only when all evident and obscure causes of his ill health have been sought (and if possible removed) and his joints have been restored to their greatest possible function. The approaches to the problem which the individual presents must be made from many sides. The whole man or woman must be considered and not *his* knee joint or *her* hands. When a local infection is found, for example bad tonsils, we must not in a cavalier fashion order them out, giving the patient a strong hope that his troubles are over. I am not advising against the removal of the tonsils if they obviously need removing and when the patient's condition warrants this procedure which in the adult is by no means always minor surgery. Yet the chances are quite as great that unhappiness at home, or financial worry or fatigue has lowered his resistance to "germs" which under more serene conditions he carried about in his throat in perfect peace. Not long ago I was talking with an eminent internist who has contributed much to the solution of the problem of chronic arthritis and is especially interested in the bacterial approach. At that time he entertained the hope that he had helped to discover the specific cause of the atrophic, rheumatoid type. He asked me this interesting but perhaps futile question. "What do you consider the most valuable single method of treatment of rheumatoid arthritis?" I said there was not in my opinion any single treatment. He acquiesced, but insisted that I should answer his question. After consideration I said, "mental and physical rest." This bacteriologically minded internist replied, "I agree," and my opinion of his stature grew greatly.

I am endeavoring to emphasize the point that there is evidence to suggest that generally the physician will be less likely to succeed in relieving patients by an attack made from one single angle, by surgery or by injections (vaccines, non-specific proteins and the like), than by a patient and painstaking evaluation of their difficulties and their aberrations, and by conserving joint function by every physical and mechanical means which has this end in view. Again, the whole is greater than any of the parts.

For the orthopedic surgeon to play his role with credit, I believe that almost always he should have close association with an internist deeply interested in the problem of chronic as well as acute disease. I would go farther. It is best, I think, to have one man physician-in-chief and one man the captain of the patient's fate. This captain should usually be the internist and a good orthopedic surgeon should be his first mate. The disease is so protean in its manifestations that these two heads are more than twice as valuable as one head. As the investigation of the case proceeds, the crew may well need to be enlarged to include a gen-

eral surgeon, if an appendix or a gallbladder needs removal, a gynecologist, a laryngologist, a urologist, a dentist and almost always a radiologist. A cheery and kindly nurse is often also an essential player in such a team. I have no right to give counsel to the internists and I speak without authority, but in the atrophic, rheumatoid, proliferative type from my observation as first mate, with an internist as captain, I have come to believe that these cases usually warrant at least temporary hospitalization, and importance is attached to:

1. Laboratory studies of the circulatory, respiratory and excretory systems, of the basal metabolism and blood cholesterol, of the sedimentation rate (sometimes misleading), and such other laboratory tests as may seem indicated in the individual case, with the appropriate treatment which the findings suggest.

2. Satisfying the nutritional demands of the patient and discovering the optimum diet for the individual.

3. The maintenance of the best possible body mechanics in all standing, sitting and lying postures. (This I suggest is a medical as well as an orthopedic duty).

4. The discovery of all possible foci of infection and the decision as to whether or not their removal is advisable if the condition of the patient warrants this measure.

5. The administration of such medications, sedatives, or injections as are considered to be appropriate and helpful.

6. The establishment of the patient's equanimity (and this I consider most important).

I would outline the role of the orthopedic surgeon as follows:

1. Alert attention to the prevention of deformity and the conservation of joint function.

2. Supervision of the administration of the indicated physical therapy, exercise, heat, massage and baths, occupational therapy and the planning and application of those mechanical aids in the way of apparatus for resting the joints or allowing safe and pain-saving movement in the upright or downright position.

3. Close attention to the principles of good body mechanics in lying and sitting and standing.

4. Correction of deformity when it has occurred by apparatus or surgery. When the disease has become quiescent, the orthopedic surgeon must decide whether or not useful degrees of rehabilitation may be offered by further surgery and if he decides in favor of such measures, he should carry them out following a carefully planned campaign and with no turning back after his hand has grasped the plough. The success of such measures will depend upon the mental and physical condition of his patient, the skill of the surgeon and the determination of both the patient and his doctor to see things through to the end.

A little later I propose to discuss for a few minutes this serious problem of the rehabilitation of the badly handicapped atrophic arthritic patient, the fires of whose disease seem to have burnt out, leaving only the bitter scars.

TREATMENT OF HYPERTROPHIC ARTHRITIS

The treatment of hypertrophic arthritis is quite different from that of the atrophic type, and the patients less often demand even temporary hospitalization. Generally speaking, they do not appear to be sick people and resent being considered as such.

1. In my own practice I still follow the rule of having an internist make a careful and thorough general examination to establish the integrity of the various bodily systems or discover their weaknesses. They will often be found to be carrying more than the necessary weight, which burden is causing a constant micro trauma to their damaged joints. There will be a considerable group whose blood cholesterol and basal metabolism suggest thyroid medication. My internist partner, Dr. Francis C. Hall, is greatly intrigued by discovering the very remarkable clinical relief which follows the administration of some of the newer ovarian hormones, such as progynon or theelin, especially in those cases in which the symptoms are associated with a prolonged normal menopause or an artificially produced cessation of the menses by castration, x-ray or radium treatment. The administration of these hormone preparations, I should add, has also in his hands been surprisingly efficient in favoraby affecting the course of many cases closely resembling the atrophic type. This has been especially true in myalgias and arthralgias, even

in some of those exhibiting swelling in or about the joints. So far these findings should be looked upon as clinical investigations the results of which will be published, if and when a sufficient number of carefully analyzed cases have been collected to warrant a report.

2. The discovery and prescribing of an optimum diet is as important as in the atrophic type.

3. The establishment of the best bodily mechanics is another essential, especially in relation to the lines of weight bearing in walking and the body thrust in sitting.

4. Active foci of infection which may be affecting the patient's general health obviously need attention, but as I remarked in relation to the possible serious aftermath of tonsillectomy in the atrophic type, it is suggested that not too many teeth be taken out at one sitting. Most investigators are of the opinion that in the hypertrophic type focal infections are unlikely to be the exciting causes of the onset of the disease, nor is vaccine treatment usually a rational or successful procedure.

5. The internist will find the problems of appropriate medication less knotty than those associated with the atrophic type.

6. The psychiatric problems also of the average patient affected by hypertrophic arthritis are more simple than those of the average atrophic case.

The role of the orthopedic surgeon is a very definite one. The affected joints of the hypertrophic type demand first of all protection and often temporary or absolute rest. There is little danger in this type that even complete immobilization for several weeks will result in more limited motion. I have stated the reasons why this is so. Prevention of deformity in these cases is important, especially in knees and hips, which tend to become flexed, but is much easier to control than in the atrophic type.

Supervision of the indicated physical therapy is as important as with the atrophic joints. By every means at our disposal the local joint circulation should be increased, but more care must be taken not to over exercise the joints. The condition of the joint and its range of motion the day after it is exercised will be a better indication as to the optimum amount of voluntary exercise than the joint symptoms immediately after the exercise is taken. Will you allow me to use a Northern simile? The motion of a finger with a winter crack over the joint (a common New England annoyance) will be less painful as the repeated motions are made, but this motion does not heal the crack. Back support, abdominal support, knee and foot supports are extraordinarily efficient in lessening discomfort and in favoring quiescence of the local joint process.

I have mentioned the importance of correcting faulty body mechanics.

Surgery has played a small part in the therapy of hypertrophic arthritis. It seems to be chiefly applicable to those cases of continuously painful malum coxae senilis in which a stiff hip is less handicapping than the distressing disability of a very limited motion. Informal arthroplasties and pseudoarthroses are also occasionally successful. The characteristic exostoses may become detached and become wandering and incapacitating joint mice which demand removal.

In an attempt to illustrate graphically the points in treatment I have been endeavoring to make, I wish to present four short case histories which I have published in a previous unimportant communication.

CASE REPORTS

Atrophic, Rheumatoid, Proliferative Type. **Case 1. A tall, ptotic woman of 35 years, weighing less than 100 pounds; lineaments of former beauty and happiness discernible; present disfigurement and discouragement only too evident. A musician by nature; a mother and family drudge by marriage. Elbows, hands, knees and feet swollen and limited in motion; chronic atrophic (rheumatoid) arthritis of ten years' duration. No known cause other than worry and depression. All known or imagined foci of infection removed years ago. Treatment by anti-rheumatic medication and vaccines had been unavailing. Irrevocable changes in joint tissues. This was the picture presented when consultation was sought. She was placed in a modern hospital with every facility for treatment. Fresh air, sunshine, laboratory studies, physical therapy, interested medical and orthopedic attention were lavished on her for a period of observation which lasted six months. Then return to family 1,000 miles away became financially necessary. *Result.* Gain of 20 pounds in weight. No new joints affected; activity of disease controlled, arrest seems possible if favorable mental and physical regimen**

can be continued under medical observation in her own home. Report nine months later. Regimen gradually relaxed: perhaps insufficient help from busy husband, family cares, never leaves room on second story, no courage or facilities to keep up the fight: more joints involved, practically bed ridden. Tired and worn out by mental and physical struggle: may well yet live to three-score years and (perhaps) ten, but with distressing labor and sorrow: too late: permanent loss of function, serious; permanent loss of morale, more serious.

Hypertrophic, Osteoarthritic, Degenerative Type. Case 2. Eminent lawyer of 70. Huge overweight man, former athlete, knowing good food but temperate; mentally alert, optimist by nature: weighty matters to settle; overwork. Constipation, high blood pressure. Many years of increasing disability in back, hips, knees, hands and feet, not taken seriously in an attempt to "bull it through." Rest and careful diet either not enjoined by physician or followed by patient; no hospitalization. This was the picture presented when consultation was sought; far advanced hypertrophic arthritis. Suggestions as to diet, loss of weight, relief of constipation only partially followed. Relief of back and lower extremity joints by apparatus. Course of vaccine treatment at request of patient's friend followed by no appreciable benefit, perhaps less constipation. Period of observation one year. *Result.* Increasing disability, onset of sciatica from nerve root pressure of bony overgrowths; confinement to house, optimism waning. Cerebral hemorrhage, death. Early signs and symptoms not taken seriously because tolerable. Individual as a whole not considered or conserved.

Atrophic, Rheumatoid, Proliferative Type. Case 3. College student of 22; duration of symptoms six months; cause unknown. Spindle-shaped tender, dusky swelling of several midphalangeal joints of hands, tender swelling of metatarsophalangeal joints of feet, minor joint symptoms in several other joints. No permanent joint damage; fatigue; constipation, low blood pressure, moderate secondary anemia, bad body mechanics, vasomotor disturbances. Tonsils already out, teeth checked up, no known surgical focus. Medication had been without avail. Never laid up but growing worse. This was the situation when consultation was sought. *Treatment.* Hospitalization for six weeks. Unsuspected and innocent Neisser infection discovered in course of thorough investigation. Rest, heliotherapy, steam baths, local treatment to source of infection; body mechanics corrected. Period of observation seven months; steady improvement. Has returned to college; considers herself practically well. For the last three years, after taking a secretarial course, she has worked in several clerical capacities. There has been no acute exacerbation of her joint troubles, though if overtired and worried or following a cold, some of her joints remind her of her old incapacity. A brand snatched from the burning. Alas, we do not see these patients early enough, as a rule, to make it possible to arrest the disease so quickly.

Hypertrophic, Osteoarthritic, Degenerative Type. Case 4. A woman of 50; increasing incapacitating symptoms in back and both hips for six years. Roentgen rays show well-advanced hypertrophic arthritis in the spine and both hip joints; double malum coxae senilis. Low blood pressure, low basal metabolism, anemia; bad body mechanics, overweight, constipation, mental depression. All surgical foci including uterus had been removed. Medication ad nauseam. Little left save the arthritis which was going on as merrily as ever. This was the picture when consultation was sought. *Treatment.* Complete medical review; rest and heliotherapy enjoined. Endocrine necessities met, body mechanics corrected, support afforded to affected joints, overweight reduced, prolonged study of alimentary needs, diet stabilized, constipation relieved. Frequent periods of hospitalization. Motion in hips retained, slightly less in range but painless. Period of observation eight years. End result for last four years; enjoys excellent health, has walked two miles, motors freely, no longer mentally depressed, runs a farm. Has recently been to Europe alone and returned without untoward event. Process seems quiescent.

CONCLUSION

The role of the orthopedic surgeon in the treatment of arthritis will continue until the internists have shut off the supply of threatened and confirmed derelicts. That day I fear may be a long way off, but to it we must aspire as "Faith is the substance of things hoped for, the evidence of things not seen." (Hebrews 11, 1.) Until that time the orthopedic surgeon should tread his measures hand in hand with the internist. He may even join the ranks of those who are seeking to discover the background and foreground causes of these syndromes by the methods of pure research. In fact, the occasional orthopedic surgeon has already contributed to such research. The conservation of joint function will continue to be his chief endeavor and the restoration of impaired joint function should be a most important and rewarding by-product of his labor.

NINETEENTH CENTURY CONTRIBUTIONS TO THE TREATMENT OF PULMONARY TUBERCULOSIS

SYDNEY JACOBS, M. D.
NEW ORLEANS

Tuberculosis can be successfully treated today largely because of the advances made during the latter half of the nineteenth century, that golden age beginning shortly after 1840 when the foundations for the modern campaigns of disease-prevention and mortality-reduction were laid. The experimental and clinical observations of these five decades were more fruitful in helping men to conquer tuberculosis than were all preceding centuries.

There were several reasons for this. The stage had been set, so to speak, by the advances in pathology, by Laennec's demonstration of the unity of phthisis and tuberculosis and by the ever-increasing acceptance of the doctrine of the curability of the disease. With Koch's isolation of the causative bacillus there was only to be expected a tremendous impetus to any such campaign, but even more powerful was the incentive to find a specific method for curing a malady at last recognized not to be inevitably fatal.

Prior to this time, therapy for the tuberculous was a commentary on the credulity of the populace and the ignorance of the profession. So long as tuberculosis was held to be a visitation of the gods, an omen of displeasure of the evil spirits, a manifestation of some hereditary taint or even a mysterious malady defying study, it is obvious that no real progress could be made. Logical therapy awaited logical thinking about the disease, and such logic was not forthcoming until the minds of medical men were willing to abandon the useless dictums of the past and to accept the accumulating mass of scientific data. Tuberculosis as a public scourge could not be conquered until the relationship of public health measures to spread of the disease was appreciated and until the medical thinkers would learn that phthisis was not only a pulmonary affection but also disease of a society that permitted its members to be exposed.

Nineteenth century advances in physiology, pathology and bacteriology were paralleled by attempts to apply them to clinical medicine. These advances were not by any means uniform, and frequently methods of therapy were employed empirically only to be substantiated by subsequent investigators. In general, it may be said that there evolved during this time three distinct approaches to the successful treatment of the tuberculous patient: the hygienic-dietetic, the surgical and the immunological. The first was a persistence in more intelligent form of a mode of therapeusis known to the ancient Greeks; the second was an outgrowth of those bacteriologic studies which postulated for every disease a specific infection and therefore a definite infectious focus to be suppressed or eradicated; the third was the horribly misdirected hero-worship of the genius Koch who had blundered once too dramatically.

KOCH AND TUBERCULIN

Perhaps it is well to consider first of all the last of these approaches. When Robert Koch announced in 1882 his discovery of the tubercle bacillus, mingled scepticism and enthusiasm greeted his presentation. Despite the fact that his was a masterful array of facts arranged in an orderliness that frustrated scientific fault-finding, nearly ten years elapsed before the general body of the profession was satisfied. By that time however, accumulated data had been so thoroughly corroborative of his work that the eyes of the entire medical world were turned to Berlin to see what next the Master would do to astound them.

They did not have to wait long. Koch had been continuing his experiments with the tubercle bacillus and found that if he grew it on broth, he could extract in glycerin a substance which he called "tuberculin". When he injected this tuberculin into the bodies of tuberculous individuals, he elicited a characteristic response of inflammation; when he injected it into the bodies of nontuberculous individuals, there was no such sequel. The natural inference was that he had found a substance useful in differentiating the tuberculous from the nontuberculous. In pursuing his researches on the actions of this substance, he was lead to study its effects in treatment of phthisis and soon came to believe that such therapy was of great benefit to his patients.

In a short time, Koch was ready to announce the results of his observations. It is not definitely known why he was so quick to make public his studies but there is real reason to believe that he was strongly influenced by the Kaiser, William II, who was anxious to achieve the reflected glory of what would have been a truly magnificent contribution to civilization. In 1890, before the Tenth International Medical Congress in Berlin, Koch reported that "he had hit upon a substance which has the power of preventing the growth of tubercle bacilli not only in the test tube but in the animal as well". Doubtless this was to have been only a preliminary report, but the pitiless searchlight of relief-seeking humanity was thrown upon him with all its intensity. Subsequent presentations were as ill-founded; November 3, 1890 he read a paper, "On a further communication on the remedy of tuberculosis", and it is related that the next week 1500 medical men arrived in Berlin to see the remedy with which "phthisis can be cured in the beginning with certainty". He published another paper November 17 of the same year and yet another one January 17 of the next year. When reproached for keeping secret the composition of his new tuberculin, Koch replied that he feared to make it public too early lest the general body of medical men use it inadvisedly and thus cause harm.

Since the supply of tuberculin was at first scanty, its use was limited to a few European physicians. Public demonstrations were conducted in London by Heron and by Cheyne both of whom satisfied themselves of the feasibility of using tuberculin for all forms of tuberculosis. Within a few months after its introduction, this method of therapy had been accepted by all medical men of Germany, and visitors were astonished how generally it was employed. They noted the frequency with which patients had general reactions and severe ill-effects. The end of this wave of enthusiasm came only after literally thousands of patients had been materially or fatally injured through this means.

The tragedy of this dramatic experiment was early realized, and almost as quickly as it was adopted was it abandoned. We can hardly blame Koch for hoping to produce something analagous to the diphtheria antitoxin of von Behring or the antirabies inoculations of Pasteur. It may be better to agree with the observer who called it a lay verdict forced by lay opinion on the general practitioner. In fairness to him, we should recall that almost single-handed he was able to prove the cause of tuberculosis, a contribution too precious to the world to be off-set by even the tragically startling effects of tuberculin therapy.

THE HYGIENIC-DIETETIC APPROACH

The development of a rational hygienic-dietetic regimen was really initiated in this golden age, but of forerunners there were legion. From the time of Hippocrates, there was belief that tuberculosis could be ameliorated by travel to a more equable climate, exercise in the open air and adoption of sensible modes of living. Pliny had written of the curative powers of the sun; Hippocrates advocated complete bed rest for hemoptysis; while early Greek and Roman physicians prescribed sea voyages to arrest the severity of phthisis. A famous 18th century British orthopedist, Jean Pierre David, had noticed that whenever he insisted on complete bed rest for a patient with caries of the spine, the pulmonary status improved. Black and Buchan at the opening of the eighteenth century advised phthisical patients to drink plenty of milk and to exercise in the open air. Thomas Sydenham wrote of the beneficial effects of open air exercise, especially horseback riding.

It is evident that these earlier physicians had some intimation of the value of what we might term the hygienic-dietetic approach, but they did not develop their ideas further or make any attempt to formulate a plan for the tuberculous patient to follow in his quest for health. The first man to do this was George Bodington who established what was the first sanatorium for the tuberculous near Birmingham, England, about 1840. Just when he began to accept such patients for treatment is unknown, but as early as 1833 he had written that the "open air" methods of treatment were to be preferred to all others. In 1840, he published a pamphlet, "An Essay on the Treatment and Cure of Pulmonary Consumption on Principles Natural, Rational and Successful". He had only the vaguest of ideas concerning the etiology of

tuberculosis, but he did note its greater frequency among city dwellers as compared with farmers and for this reason advised consumptives to take to the country for their cures. He condemned the then prevalent methods of treatment: confinement in a closed room, inhalation of various gases and a starvation diet. It is interesting to note that he grasped somewhat the social implications of the disease for he urged erection of municipally supported institutions for the care of tuberculous patients. His views were strongly opposed, and within a few years he had ceased to accept consumptive patients, converting his establishment into one for the insane.

Bodington's views made relatively little impression on medical minds, and it is highly probable that the three men most responsible for the establishment of the sanatorium movement (Brehmer, Dettweiler, Trudeau) had never known of his work.

THE TEACHINGS OF BREHMER

Herman Brehmer, who was born in 1826, spent all of his life trying to convince the medical profession of the curability of pulmonary tuberculosis. Early in his career, he was influenced by the writings of Rokitansky who had found healed tubercles in the lungs of people never diagnosed as being tuberculous; this observation was so common at autopsy that the only logical inference was that tuberculosis could heal if conditions were favorable. He arrived at such views despite Virchow's dominating teachings and despite the commonly accepted maxim that "the greatest calamity that may befall a consumptive is to become tuberculous." When Brehmer in 1853 delivered his thesis, "Tuberculosis is Curable," he aroused the ire of the entire profession. In 1849, the sister of his first wife, Marie von Colomb, established a small hydropathic institute in Gobersdorf, Silesia; later it was necessary for Brehmer to move there as the superintendent, and he immediately began to accept tuberculous patients.

Believing tuberculosis to result from a heart too small to circulate blood adequately through the lungs, Brehmer centered his plan of treatment about efforts to increase cardiac musculature. The therapeutic prescriptions were indeed harsh. Patients had to take daily baths in the open air and to receive hydrotherapy from his own hands. A meticulous technic was evolved; a stream of water the thickness of the thumb was delivered against the bare skin from a height of exactly five meters and with great force. No one but Brehmer himself was allowed to superintend such treatment, but the rest of the plan was in marked contrast to such rigidity of prescription. He refused to see patients for weeks at a time except for the brief period of hydrotherapy and permitted them to follow their own inclinations as to the amount of exercise they needed. He formulated only the most general rules for exercise and had graded walks constructed with benches all along the road to tempt the weary patient to rest. Since the patient ascended the grade when he began his exercise, the way back to his bed was down grade and therefore not so taxing. Only in his later years did he appreciate the value of complete rest in bed.

He was the first to insist on forced feeding and was responsible for the innovation of taking temperatures of his patients every two hours. So convinced was he of the necessity for constant exercise that he would not permit his patients to refrain from their walks unless the weather was forbidding, and to provide for such he had glass-enclosed walks constructed. Denounced as a charlatan in 1853, Brehmer lived to see his doctrine of the curability of tuberculosis preached by every clinical professor in Europe by 1889. The benefits attributed to his mode of therapy by far exceeded those of any other known system.

Brehmer's influence was felt by Peter Dettweiler who was born in 1837 and had a pulmonary hemorrhage when yet a young man. He recovered so quickly that he was convinced of the curability of tuberculosis and went to Brehmer's sanatorium to be cured. He stayed on as an assistant after he had regained his health, but disagreed so violently with Brehmer on many points that it became necessary for the two to part company. Dettweiler then established his own sanatorium at Falkenstein where he substituted reclining chairs for the open-air exercises practiced at Gobersdorf. Disregarding inclement weather, patients stayed out-of-doors reclining in these chairs the greater

part of their stay there Only the extremely ill or febrile patients remained within the buildings during the day. As soon as a patient had regained sufficient vigor, graduated exercises were begun.

To the influence of Brehmer may also be attributed the founding of the sanatorium movement in this country. Edward Livingston Trudeau was a young New York physician who had gone to the Adirondacks to regain his health. Born in 1848, he was educated in Paris and returned to this country at the close of the Civil War. In 1865 his brother died of tuberculosis after the two had been together almost constantly. Three years later he entered the College of Physicians of New York City and was graduated after a year of study. Subsequently, attacks of fever were attributed to malaria, swelling of the cervical lymph nodes was called scrofula and loss of weight and strength attributed to other conditions. In 1871, Theodore Janeway informed him that he had tuberculosis; he immediately departed for the Adirondacks expecting to spend his last days where hunting and fishing were appealing. Arriving at an isolated community, he soon noted that he was regaining his health and was enabled to practice medicine among the village people.

In 1882, Trudeau chanced to see a copy of Anstie's English Practitioner containing an account of a visit to Brehmer's Sanatorium in Gobersdorf. Being materially influenced by this article, he decided to establish a similar institution in the Adirondacks. Financial obstacles prevented his erecting a series of large buildings; so he started with a number of cottages each of which accommodated only two patients. The first of these was opened in 1884, and was called "The Little Red" because of its bright color. With an increase constantly in the number of patients seeking admisison to his cottages, it was necessary for Trudeau to erect larger buildings after the fashion of Dettweiler. From this modest start arose the country-wide system of sanatoria in the United States.

SURGERY

The third concept, that tuberculosis could be cured by surgical means, is also a growth of the nineteenth century, but its seeds had been planted centuries before. It is known that Hippocrates introduced air into the chest for pulmonary suppurations, that Georgius Baglivius in 1697 advocated incision into the chest for various pulmonary diseases, and that Sir Edward Barry in 1727 wrote of similar measures for lung disorders. Yet there was no really systematized lung surgery until the nineteenth century was well under way. Interestingly enough, it was not a surgeon but an experimental physiologist who showed the way. In 1821 James Carson of Liverpool wrote concerning tuberculosis, "It has long been my opinion that if ever this disease is to be cured, and it is an event of which I am by no means disposed to despair in all cases, it must be accomplished by mechanical means or in other words by an operation". Twelve years later, he wrote, of pneumothorax, "The lung would by those means be reduced to a quiet state of collapse and the elastic fibers separated by the ulcer would be brought into contact. The lung would in consequence of the absorption of air contained between the two pleurae be dilated to a contiguity with the internal surface of the chest, and if the other lung were diseased, it might be treated as the former had been." Carson's work was done experimentally on rabbits, and he succeeded in disproving the oft-quoted belief in the incompatibility of pneumothorax with continued life. He induced a surgeon to perform the operation on two patients, but the cases selected were not suitable for the procedure, and both his subjects died. Accordingly, the operation was abandoned as impracticable. In 1832 Houghton and again in 1837 William Stokes of Dublin demonstrated that perforation of a lung need not necessarily be followed by death or might even be succeeded by temporary amelioration of symptoms, but such observations were generally disregarded, and pneumothorax as an operation was considered impracticable if surgeons thought of it at all.

During the period of the ascendency of surgery, there were naturally many attempts to devise operative measures to cope with the problems of the tuberculous patient; most of them were intended to eradicate the infected areas. Such operations were doomed to failure; the pioneers in this field, Krimer (1830), Gluck

and Bloch (1881), W. Koch (1882) and Godlee (1887) were working without the benefit of adequate diagnostic and surgical facilities. The ensuing fatalities discouraged further attempts of this sort.

ARTIFICIAL PNEUMOTHORAX

There is considerable controversy as to priority in the establishment of artificial pneumothorax by the closed method. Despite such dispute, it is generally admitted that Carlo Forlanini was the first to demonstrate publicly the practicability of the procedure. Born in 1847, Forlanini was graduated in medicine at the age of 23 and shortly thereafter took his place on the staff of the Ospedale Maggiore of Milano where he subsequently rose to head the Department of Dermatology. Apparently his interest in tuberculosis began early in his career for in 1874 he published a report of a case of tuberculosis of the myocardium. In 1882, just six months after Koch had announced his discovery of the tubercle bacillus, Forlanini read a paper entitled, "As a Contribution to the Surgical Therapy of Phthisis: Ablation or Pneumothorax?". He had never performed or even seen pneumothorax performed and was recommending it only because the available evidence seemed to indicate its use. He was uncertain of the reception to be accorded his presentation and therefore proceeded most cautiously. He cited Emil Toussaint's finding of 24 cases of spontaneous pneumothorax with recovery and therefore reasoned that it was not inevitable that death follow establishment of pneumothorax, either induced or spontaneous. He further argued that if patients improved after such an accident, it would be well to imitate the natural phenomenon since most ulcers heal when the ulcer-bearing portion of the body is placed at rest. It is of interest that before he had performed the operation once, he anticipated the major complications of the procedure: shock, mediastinal displacement and empyema. He next began to collect patients for the procedure but did not report his results until 12 years later.

The technic employed by Forlanini was quite similar to that of today except that he did not have the advantage of the manometer. At first he introduced 250 c.c. air daily, later lengthening the interval to one week. He soon recognized the rapid absorption of oxygen from the pleural sac and recommended the use of pure nitrogen. He commented in detail on the effects of adhesions in preventing satisfactory collapse of the lung.

The controversy as to priority in establishing pneumothorax has never been properly settled. According to Frederick Tice, John B. Murphy in 1888 wrote to Forlanini to request dates of his first operations and never received any response. When Murphy read his famous paper "Surgery of the Lung" in 1898, he included artificial pneumothorax as one of the operations described in great detail. He used a trocar to inject air and administered large amounts (800-3000 c.c.) with the object of keeping the lung completely collapsed. The lung was permitted to re-expand almost completely before air was administered again. He recognized the necessity for continued pneumothorax over a period of years. Even at this early date, he was advising plombage and apicolysis wherever adhesions prevented proper administration of pneumothorax. Probably he was the earliest worker in oleothorax for he mentioned the injection of mineral oil into the pleural cavity. With Tice, he was a pioneer in the establishment of a clinic for the administration of pneumothorax to the ambulatory patient at the Dunning Tuberculosis Institute, the oldest county tuberculosis hospital in this country. Working in 1898 without adequate roentgen ray facilities, they established a program followed in great measure today.

SUMMARY

Thus the physician of today who prescribes bed rest for his tuberculous patient is following the lead of Brehmer, Dettweiler and Trudeau; if he practices artificial pneumothorax, he is applying knowledge gleaned at the beginning by Forlanini and Murphy; while if he prefers to employ some of the modern ultracautious technics for administering tuberculin, he is only trying to work with the tools fashioned by Koch. In short, he who today practices the healing art among the tuberculous is but distributing with profit the contributions of the nineteenth century.

NEW ORLEANS
Medical and Surgical Journal

Established 1844

Published by the Louisiana State Medical Society under the jurisdiction of the following named Journal Committee:

Charles M. Horton, M. D., *Ex-Officio*

For one year: W. H. Seemann, M. D., Chairman
Maurice J. Gelpi, M. D.

For two years: John A. Lanford, M. D., Secretary

For three years: Leon J. Menville, M. D., Vice-Chairman.
William H. Perkins, M. D.

EDITORIAL STAFF

John H. Musser, M. D. ..... *Editor-in-Chief*
Willard R. Wirth, M. D. ..... *Editor*
G. C. Anderson, M. D. ..... *Associate Editor*

COLLABORATORS—COUNCILORS

H. E. Bernadas, M. D.
Daniel N. Silverman, M. D.
C. C. DeGravelles, M. D.
M. D. Hargrove, M. D.
J. B. Vaughan, M. D.
Rhett McMahon, M. D.
C. A. Martin, M. D.
W. F. Couvillion, M. D.

Paul T. Talbot, M. D. ..... *General Manager*

1430 Tulane Avenue

SUBSCRIPTION TERMS: $3.00 *per year in advance, postage paid, for the United States;* $3.50 *per year for all foreign countries belonging to the Postal Union.*

News material for publication should be received not later than the twentieth of the month preceding publication. Orders for reprints must be sent in duplicate when returning galley proof.

THE JOURNAL *does not hold itself responsible for statements made by any contributor.*

Manuscripts should be addressed to the Editor, 1430 Tulane Avenue, New Orleans, La.

THE SOUTHERN MEDICAL ASSOCIATION MEETING

Arrangements have been completed for the holding of the Thirty-first Annual Meeting of the Southern Medical Association in New Orleans, from Tuesday, November 30, to Friday, December 3, inclusive.

Headquarters will be at the Roosevelt Hotel but all of the convention features, the scientific meetings, the scientific exhibits and the technical exhibits will be at the Municipal Auditorium. All programs have been completed and will appear in the November issue of the Southern Medical Journal. The space for scientific and technical exhibits has been utilized to capacity.

The number of requests for hotel reservations, which up to this time exceeds 1200, indicates that this is going to be a very largely attended meeting. While there are ample hotel accommodations still available, doctors who are planning to attend this meeting should immediately communicate with Dr. M. T. Van Studdiford, Chairman of the Hotel Committee.

The meeting will be featured by the holding of public sessions on Tuesday night at the Municipal Auditorium at which prominent speakers will address a two hour meeting. From the program it will be noted that the subject matters are of very general interest and will be presented by able speakers.

During the convention there will be a daily fifteen minute broadcast over Stations WSMB, WDSU, and WWL, at which time short talks will be made on subjects in which the profession, as well as the public of the state, should be particularly interested. Provisions have also been made for the appearance of out-of-town speakers before a number of the large luncheon clubs.

In preparing the program, both scientific and entertainment, nothing has been left undone toward making it interesting and pleasant. The program prepared by the Arrangement Committee appears on page 304.

L. L.

THE CARVILLE LEPROSARIUM

An outstanding paper in the September issue of the Journal by Dr. Dimitry, has aroused much interest and comment. The article on The Introduction of Leprosy in Louisiana and the First Leper Hospitals excited both historical and also contemporaneous interest in the subject of the leper hospital of the past and of the present.

The United States Marine Hospital at Carville at the present time is an institution which honors the United States Public Health Serv-

ice. It is well equipped and it has a personnel of physicians who are interested primarily in leprosy and research problems presented by this disease. In spite of the apparently adequate provisions for the care of the leper, it was felt that the institution could be improved still further so, therefore, in August 1937 there was appropriated $4,600,000 for rebuilding and enlarging the institution. One and a half millions have already been made available and the whole sum will be spent in a period of approximately three years. With the expenditure of this money undoubtedly there will be constructed one of the outstanding leprosaria in the world.

The hospital is maintained at the present time on a budget of approximately $400,000 a year, to which sum has been added certain grants for research work. The research problems have to do with the bacteriology and pathology of the disease and an important field study on the epidemiology of leprosy. The medical staff consists of four doctors on a full time basis and one dentist. In addition to these men there are four attending specialists who make weekly or bi-weekly visits to the institution.

It might be of interest to know that since 1894 there have been treated 11,063 patients and the present census shows 372 patients in the hospital. The care of these patients is magnificent. They are extremely well treated both from the physical and from the medical point of view. Their quarters are excellent and everything is done to make their unfortunate lot as happy as can be. Altogether at the present time it might well be said without qualification that the institution, when reconstructed, will be as adequate and complete as such an institution could be made.

From little seeds giant oaks spring; from the small beginning of the able and energetic Doctor Dyer there has developed a great leprosarium.

NUTRITION AND GRAVES' DISEASE

If there is one disease that stands out as a disorder which requires cooperative efforts of both the surgeon and the internist it is Graves' disease. Both of the two types of specialists should be, and are, interested in the management of these patients and frequent have been the discussions as to the proper form of treatment, whether medical, surgical or roentgenologic. In spite of the difference in feeling about the care of the patient it is quite generally recognized that it requires good teamwork to give to the patient the best possible medical services.

In a recent paper by Means, Hertz and Lerman* one of the factors that the average medical man disregards is brought out forcibly, to wit, the proper nourishment of the thyrotoxic patient with an extreme degree of malnutrition. In the first part of this interesting presentation the authors call attention to a fact which is not generally appreciated, namely that a certain small group of patients develop symptoms of hyperthyroidism succeeding forced efforts to reduce weight. Having discovered 35 such cases they believe that this factor is undoubtedly of some significance, particularly as it is known that there are several types of episodes which may institute active thyrotoxicosis such as physiologic strains, pregnancy, psychic trauma and so on. However, their main thesis has to do with the necessity of feeding patients a diet which is adequate, not only in supplying the increased energy requirements of the individual who is burning up nourishment at a rate considerably higher than the normal individual, but also to meet other indications. Although an anemia is by no means common, nevertheless there is a certain number of people who show evidence of hypochromic anemia in spite of a count which may be reasonably high. These patients definitely require a diet containing plenty of iron and this diet should be supplemented by iron as a drug. They have noted in a certain group of people the skeleton shows at times marked decalcification and they point out that roentgenologic study should be made of the bones, notably in those patients who have marked bone decalcification which may be suggested by deep aching pains in the extremities

*Means, J. H., Hertz, S., and Lerman, J.: Nutritional factors in Graves' disease, Ann. Int. Med., 11:429, 1937.

or back. These patients should be given calcium.

The meat of the article inasmuch as increased frequency is concerned, lies in their statement that vitamin B_1 is needed to excess in patients who have an increase in metabolic rate; their intake of vitamin B_1 may be sufficient for a normal person but the need for it increases in parallel fashion to the metabolic rate. For this reason they recommend in the undernourished individual the administration of yeast and yeast in large quantities. If this vitamin does nothing else it at least increases the appetite significantly and it may also have some beneficial action on the heart.

The advice then is to give to malnourished thyrotoxic patients large quantities of carbohydrate, a protein intake proportionate to their weight and age, and fat as would be given to a normal person. To this ration are added calcium or iron, if indicated, and in every instance vitamin B_1 not to forget of course the usual preoperative iodine. With this regimen the authors feel that a therapeutic program is provided for the patient which will make him or her a good operative risk.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

TRI-STATE HOSPITAL

The meeting was called to order on September 23, 1937, by Dr. J. E. Knighton, Sr., acting chairman. There were 32 members of the regular staff present. The routine business was disposed of as usual.

Dr. J. M. Gorton, Secretary of Tri-State Medical Convention, was introduced and announced the next meeting, to be held in Shreveport October 27 and 28. The chairman of program committee, Dr. C. R. Gowen, introduced and commented on the men who are to speak at the meeting.

The first case, presented by Dr. W. S. Kerlin, was that of a white male aged 42 years, who had been under observation for a period of five years. His complaints during this time, in addition to chronic systemic syphilis, consisted of symptoms referable to hypofunction of all the endocrine glands. The terminal illness resembled encephalitis. An autopsy was done by Dr. W. R. Mathews who presented the gross and microscopic findings in very complete manner. The clinical diagnosis of Simmond's diseases was verified by the pathology which was found. there being practically no pituitary cells as this organ had been replaced by fibrous tissue. There was no evidence of any relation between the luetic infection and the glandular abnormalities. This presentation was discussed by Drs. D. L. Kerlin, D. H. Duncan, C. R. Gowen and W. P. Butler.

The second case, presented by Dr. W. B. Worley, was that of a four-year-old white female child who presented a sudden severe abdominal pain and other symptoms definitely indicative of intestinal obstruction. Laparotomy was done and revealed a large section of the small intestine to be gangrenous. Because of the critical condition, an enterostomy was the only procedure undertaken. This was of no avail and a fatal outcome resulted a few hours later. Autopsy revealed the presence of a cyst about four inches in diameter, which was found attached to the jejunum about six inches below the duodeno-jejunal junction. This structure had produced twisting of the jejunal mesentery with resultant gangrene and obstruction.

The third case, presented by Dr. J. E. Knighton, Jr., was that of a white female 25 years of age, whose complaint was heart trouble. In addition to general findings of cardiac failure, there was definite evidence of mitral stenosis and of aortic insufficiency. There was fever, a palpable spleen, positive blood Wassermann, and one of three blood cultures revealed a growth of Staphylococcus albus. The questions of rheumatic, luetic and bacterial valvular lesions were discussed, and clinically, it was concluded that there was rheumatic mitral stenosis and aortic regurgitation, because of the fact that fluoroscopy revealed calcification in these valves. It was further concluded that subacute or acute bacterial endocarditis was present. Death ensued six weeks after the onset of acute symptoms and autopsy revealed rheumatic involvement of the mitral, tricuspid and aortic valves. There was a small vegetative growth (aortic) and a much larger (1½ cm. in diameter) growth on the upper surface of the medial mitral valve leaflet. In addition there were multiple infarcts in the spleen and smaller ones in the kidneys and at the base of the right lung. The pathologic findings and the cardiac specimen were presented by Dr. Butler.

After a discussion of the statistical and mortality reports of the previous month, the meeting adjourned. The next meeting will be held October 28. 1937.

Tom Glass, M. D., Acting Sec.

NORTH LOUISIANA SANITARIUM

The meeting was called to order by the President on September 28, 1937, with 33 members pres-

ent. After the disposal of routine business, attention was turned to the scientific program.

Dr. Herold gave a case report of a male patient, 20 years of age, who stuck a nail in his foot and received tetanus antitoxin one week prior to admission and subsequently developed symptoms that suggested poliomyelitis to his family physician who sent the patient to Dr. Herold with a probable diagnosis of infantile paralysis. Observation of the patient and studies of the spinal fluid suggested a diagnosis of encephalitis of the same type seen in the St. Louis epidemic of encephalitis and so reported by Dr. David Barr. The patient made an uneventful recovery except for some slight difficulty in swallowing and inability to articulate well. Subsequent examinations showed complete recovery. Treatment consisted of one spinal drainage, urotropin by vein daily and symptomatic care. The case was discussed by Dr. Rigby.

Dr. Rougon gave three case reports that were representative of the poor urologic risks for prostatic surgery and described a method of handling them without too much shock and yet correcting their pathologic conditions in a manner that would as a general rule keep them well for the remainder of their life expectancy. All three cases presented high N. P. N. and creatine values and all were acutely ill with acute retention of urine and uremic symptoms. These cases were first decompressed with retention catheters and a subsequent suprapubic cystotomy done and patient sent home to convalesce. On readmission, under spinal anesthesia, the suprapubic wounds were opened and the middle lobe removed; the remainder of the gland around the vesicle orifice was then reamed out with cautery punch. All three of the patients withstood the operation without the least evidence of shock or hemorrhage and all made uneventful recoveries. The report of these three cases well demonstrates the keen surgical judgment of not attempting to do the radical classical prostatectomy on individuals who are very poor surgical risks and only attempting to complete a measure that will adequately carry them through their life expectancy.

H. M. Trifon, M. D., Sec.

MERCY HOSPITAL

The Staff of Mercy Hospital held its first meeting since the summer recess on the evening of October 6, 1937.

Dr. Battalora gave a brief talk on "Internal Derangements of the Knee Joint" emphasizing particularly the diagnosis and treatment. The subject was most interestingly presented and appropriate because of the number of knee injuries acquired during foot-ball season.

Two cases were discussed in the mortality investigation. One had a primary bronchiogenic adenocarcinoma of the upper lobe of the right lung with cerebral metastasis. The symptoms were entirely cerebral and a cystic glioma was found in the right temporo-occipital region and left cerebellum. An autopsy was done which verified the above anatomical diagnosis. There was a discussion by the staff.

A second case, presented by Dr. Hauser, was a chronic alcoholic with malignant hypertension who was admitted to hospital for severe hematuria. Despite treatment no improvement in his condition was discernible and he was discharged as unimproved. Some time later he was readmitted in a stuporous condition with blood pressure of 290/150, he gradually faded and died of uremia.

The Staff announced the purchase of an electrocardiographic machine and a subcutaneous outfit. The Hospital was also given a surgical unit and a Tomas evacuator by members of the Staff. The Hospital received also a most modern operating room light, made possible by the workings of the Women's Auxiliary.

H. Ashton Thomas, M. D., Sec.

FRENCH HOSPITAL

A regular meeting of the Staff was called to order, with Dr. R. L. Gordon presiding, and discussion of interesting cases and deaths occurring during the month was then opened.

The scientific program consisted of a talk on the electrocardiogram in cardiac disease by Dr. E. Hull. He explained how the electrocardiogram shows the direction of travel, duration of travel and intensity in millivolts of the electrical impulse in the heart. The electrical impulse starts at the sino-auricular node, spreads through the auricles giving rise to the P. wave, thence to the A. V. node and during invasion of the musculature giving rise to the Q. R. S. complex, then the final T. wave, which occurs during the process of return to the resting state. After explaining the meaning of the three leads, he gave a series of lantern slide demonstrations, showing how the above waves and their related time intervals were affected in the various cardiac irregularities and also showed how the electrocardiogram could be definitely diagnostic in certain unrecognizable conditions clinically.

Dr. Hull was congratulated by the entire Staff for a very interesting talk.

There being no further business the meeting was adjourned.

R. E. Rougelot, M. D., Sec.

GRADUATE SCHOOL
LOUISIANA STATE UNIVERSITY
MEDICAL CENTER
New Orleans

The scientific meeting of October, 1937, was called by Dr. James T. Nix, Dean of the Graduate

School. Dr. Bjarne Pearson presented the following paper:

PRIMARY ANGIOMA OF SKELETAL MUSCLE

As a group, tumors of blood vessels are commonly encountered by surgeons and pathologists. They vary from the vascular nevi which appear in the skin to large congenital malformations which are situated on the face and oral cavity and occur shortly after birth. Angiomas of special locations such as bones, muscles and central nervous system are not so common but because of their anatomic location are prone to produce pain, disturbance of function and deformities which demand some sort of therapeutic procedure.

Of the 570 hemangiomas reported by Geschickter[1] from the Johns Hopkins Hospital there were 135 central angiomas, 370 peripheral angiomas and only 65 angiomas of special locations. Among the central angiomas, the liver was the most frequent, then the heart valves and the internal viscera. The peripheral angiomas are divided nearly equally into those of the scalp, face, oral cavity, skin, arms and legs. In this group the oral cavity and the face had the greatest number. Of the 65 angiomas of special location, 12 were in the bones, 10 in the muscle and 42 in the central nervous system. The muscle angiomas constitute 1.7 per cent of all the vascular tumors reported in this series.

The group that we are concerned with in this report are those that originate primarily in voluntary muscle. The first case was probably described by Liston, in 1843, who reported an angioma of the semimembranous muscle under the caption of an erectile tumor of the popliteal space. Another early report is one by Muscatello[2] in 1894 who also studied their histologic structure. In 1908 Davis[3] reviewed the reported cases and found 147 in the literature. The last report consisted of 256 cases by Jenkins and Delaney in 1932.

In order of frequency the most common site of this tumor occurred: in the gastrocnemius, quadriceps femoris, vastus internus, triceps, masseter, latissimus dorsi and biceps femoris. Eighty per cent occurred before the age of 20, and 95 per cent before the age of 30 years. The lower extremity seems to be the most common site, occurring in 107 of the 256 cases reported by Jenkins and Delaney. Primary angiomas of muscle are practically confined to the white race, occurring only once in the negro and seven times in the yellow race. Trauma was a definite factor in 17 per cent of the cases. This is of interest in so far as Dawson[4] found changes in striped muscle similar to hemangiomas while studying the healing in incised muscles. Factors in development other than trauma are suggested by Virchow as those arising from disease in the vasa vasorum. Ribbert assumes that they may also develop from embryonic rests. A congenital factor is probably important as 47 per cent occur in the first decade.

The gross aspect of the tumor has been designated as: diffuse, circumscribed or partially circumscribed. Most of the tumors are diffuse in nature and have a tendency to infiltrate the surrounding muscles. The circumscribed type which is uncommon tends to have a fibrous capsule. The diffuse type has a tendency to involve the nerves and vessels. The color is blue or red especially if it is of the cavernous type. Because of the tendency to thrombosis of this type with subsequent organization and calcification, phleboliths are encountered. These are present in less than 10 per cent of the cases but if revealed by the roentgen ray are an added factor in making the correct preoperative diagnosis. The tumor is usually soft and spongy but may be hard if there is much connective tissue proliferation. Because of the extreme vascularity a great deal of hemorrhage may be encountered by biopsy or operative procedure. Preoperative diagnosis is facilitated by aspiration of blood from the tumor. This was tried in one of our cases but failure was undoubtedly due to the small capillary structure of the tumor. The histologic structure of the cavernous type simply consists of vascular elements in a stroma of connective tissue. The spaces are usually lined with a single layer of endothelium. Thrombi in different stages of organization are present. Intimal proliferation of small arterioles is present, often leading to their occlusion.

The pure capillary angiomas are encountered in a little more than 3 per cent. As a rule, but not always, these tumors are more fibrous and firm in their consistency and appear more whitish in color. Microscopically they are composed of varying sized smaller arterioles lined with one or several layers of endothelium. The surrounding stroma is composed of a great deal of connective tissue. Actual vascular proliferation can also be seen. In all the varieties of angiomas various destructive processes can be seen in the muscle fibers. There are early changes in the muscle cells, such as loss of striations, and later hyaline changes and fatty degeneration. Fatty change was present in the tumors recorded in over 12 per cent of the cases. Thus the terminology has been further modified by calling some of these lipo-angiomas, but this adds to the confusion. Similarly, with a large amount of fibrous tissue they have been named fibro-angiomas.

In dealing with a tumor that actually and aggressively invades muscle, and especially if the tumor in the main is of the capillary type with abundance of fibrous stroma and active neoformation, one is confronted with the question of malignancy. In reviewing the 256 cases with actual follow up and behavior after operative procedure,

it is evident that they infiltrate the muscle which is the seat of their origin and extend into the surrounding muscles, and may even penetrate the aponeurosis and involve bone. Most benign tumors grow by expansion in contradistinction to hemangiomas of muscle which grow in multicentric foci and actively infiltrate the surrounding tissue. One may call attention to Ewing's[5] case of a young girl in which a plexiform angioma involved nearly all the muscles of the forearm, fat and subcutaneous tissue. Jenkins and Delaney[6] in reviewing the reported cases found recurrences present in approximately 6 per cent and mostly after incomplete removal. In a group reported by Davis and Kitlowski[7] consisting of 212 cases there were three in which partial repeated excisions were necessary for complete recovery. Two required partial excision and later amputation and five required primary amputation. Geschickter had 10 cases occurring in muscle with eight recoveries. In two cases the tumor recurred repeatedly and amputation was necessary.

The true malignant angioma with or without metatasis probably does not occur primarily in muscle as far as the reported cases are concerned. However, it manifests at least one of the attributes of malignancy, that of local invasive properties with local deformity and loss of function. Malignant tumors of the blood vessels are not common, but they have been reported as occurring in the liver, breast, and skin, notably the hemorrhagic sarcoma of Kaposi. Ewing describes a metastasizing hemangioma of the breast.

The following cases have been seen recently in the wards and the clinics of the Charity Hospital:

CASE REPORTS

Case 1. This patient was a white female, 33 years of age, who was admitted to the hospital on August 30, 1937, complaining of a tumor of the left thigh. She dated her illness back to 1932 when she developed a dull pain in the left thigh which was aggravated by walking. Her past history was essentially negative. No history of trauma was elicited. Family history revealed no cancer in the immediate family.

Examination revealed a well developed and nourished white female. The general examination was negative except for the left extremity. On the anterior aspect of the lower third of the left thigh there was a small mass approximately 2 cm. in diameter which was firm and not attached to the skin. There was pain and tenderness on palpation. Roentgen ray examination was negative and showed no phleboliths. The mass was excised and was found to infiltrate the vastus medialis in its distal portion near the junction of the tendon with the muscle. This tumor measured 1½ x 1 cm. and its surface was dark red in color.

The histology revealed that the tumor in the main was composed of large irregular vascular spaces lined by one layer of endothelium and containing red cells. Between these spaces there was rather a dense fibrous stroma in which hemosiderin and extravasated red cells could be seen. A few smaller capillaries were also present. These were lined usually by one layer of endothelium but occasionally several layers could be seen. The muscle fibers showed loss of striations and in some places hyaline change was present.

Case 2. This patient was a well developed and well nourished white male 53 years of age. About January 1937 he became aware of a severe sharp pain in the left forearm below the elbow. The pain persisted for about one week but then subsided leaving a dull ache, especially pronounced on pressure over this area. In March 1937 the patient first noted a swelling in this region. This gradually increased until September 1937 when it measured 10x7x4 cm. About June 1937 he began to complain of a cramp-like feeling in the first and fourth fingers of the left hand. He soon noted that he could flex these fingers but could not extend them. Attempts at extension of the fingers caused pain in the tumor mass. No history of trauma could be elicited. His father died of carcinoma of the bowel at the age of 63 years.

Examination of the arm showed a soft tumor mass lateral to the upper third of the radius. The mass was not attached to the radius but seemed to be in the soft tissues. When the wrist was extended and no tension put on the extensor muscles the mass was freely movable. There was a slight tenderness on deep pressure over the tumor mass. Roentgen rays revealed no bone pathology but a tumor mass in the soft tissue. No phleboliths were recorded. A needle was inserted into the tumor mass but no blood could be aspirated. In view of the absence of trauma, phleboliths and a negative attempt at aspiration of blood from the tumor, a tentative impression was gained that this was probably a sarcoma arising from the tendons and fascia and progressively involving the extensor muscles of the forearm.

Biopsy revealed a whitish, fairly firm homogeneous tumor mass which seemed to involve the deeper extensor muscles of the forearm. Very little bleeding was encountered in excising this tissue. Microscopic examination revealed that the main part of the tumor was made up of young fibroblastic tissue. Within this tissue could be seen many small vessels lined with a single layer of endothelium. However, more numerous were the small capillaries which were lined by several layers of endothelium some of which were practically occluded by endothelial proliferation. Many of the larger ones contained red blood cells. Here and there fragments of skeletal muscle could be

seen which were undergoing degeneration. In areas of denser fibroblastic stroma, accumulation of fat cells could be seen. In places where the muscle was more intact, the tissue between the muscle fibers was composed of numerous small capillary structures which had a thickened endothelial lining. In certain places the endothelium had gone beyond the confines of the vessel wall and was actively invading muscle fiber with the loss of their striations and replacement by fat and fibrous tissue.

Thes two cases represent the cavernous and the capillary type of angioma. It is apparent from the course and histology that the second case was more actively invasive and would probably progressively involve extensively in the absence of proper therapeutic procedure.

CONCLUSIONS

1. Angiomas occur rarely primarily in skeletal muscle, constituting approximately 1.7 per cent of all vascular tumors.

2. The muscles of the lower extremity, especially the quadriceps group, seem to be most frequently involved.

3. Trauma is a definite factor in 17 per cent of the cases. A congenital factor may be also operative, as 47 per cent of the cases occurred in the first decade.

4. Cavernous structure is the most common histolcgy. The pure capillary angioma is present in about 3 per cent of the reported cases.

5. The cavernous type has a tendency toward thrombosis and phlebolith formation which can be demonstrated by the roentgen ray in 10 per cent of the cases. The capillary type is more progressively invasive and unless checked may cause marked loss of function and deformity to the extremity. About 6 per cent of the whole group recur after incomplete removal.

6. True malignant angiomas of muscle have not been encountered in the literature, but a small number have at least one of the attributes of malignancy ,that of local progressive invasion.

7. Two cases are reported with histologic description. One demonstrates fairly marked invasive properties.

REFERENCES

1. Geschickter, C. F., and Keasby, L. E.: Tumors of blood vessels, Am. J. Cancer, 23:568, 1935.

2. Muscatello, G.: Ueber das primare Angiom der willkurlichen Muskeln, Arch. f. path. Anat. u. z. allg. Path., 135:277, 1894.

3. Davis, J. S.: Primary hemangiomata of muscle, Bull. Johns Hop. Hosp., 19:74, 1908.

4. Dawson, J. W.: Changes in cross-striped muscle in the healing of incised wounds, Jour. Path. & Bact., 13:174, 1909.

5. Ewing, J.: Neoplastic Diseases, W. B. Saunders Co., 1934.

66. Jenkins, H. P., and Delaney, P. A.: Benign angiomatous tumors of skeletal muscles, Surg. Gynec. & Obst., 55:464, 1932.

7. Davis, J. S. and Kitlowski, E. A.: Primary intramuscular hemangiomas of striated muscle, Arch. Surg., 20:39, 1930.

HUTCHINSON MEMORIAL CLINIC

Scientific Session conducted by the Department of Surgery, Dr. I. Mims Gage, presiding.

Pathology of Carcinoma of the Rectum (Dr. C. W. Duval, Department of Pathology): Carcinoma of the rectum is, as you know, a neoplasm of epithelial character. It arises from the pre-existing epithelial structure of the rectal mucosa. It must be further acknowledged that the mucocutaneous junction of the anal orifice may be the site of origin of new-growths of malignant character. There are three or four distinct varieties of epithelial neoplasm to be considered for this locality. Whether they are derived from the epithelium of the mucosa or the mucocutaneous junction, they are all malignant, malignant in the sense that they are prone to metastasize. It will be of interest to note, I think, that the epithelial neoplasms are relatively slow to metastasize as compared with similar growths observed elsewhere in the body. Just why that is so, I do not know. It is known that the lymphatic drainage is quite extensive and accessible and it is a wonder that there is not a regional lymph node involvement in early carcinoma of the rectum as is so often seen in the regional nodes of other parts of the body that drain sites of malignant proliferation.

Carcinoma constitutes fully 90 per cent, if not more, of the malignancies of the rectum. There are very few mesothelial malignancies. Sarcoma is rare and another type which is rarer still is the lymphoma. The types of carcinoma from a clinical standpoint are several in number. The clinical classification is based largely on the gross appearance of the neoplasm. Histopathologically, certain patterns present themselves; the commonest of all is the glandular type derived from the glandular epithelium of the rectal mucosa. Because it mimics the parent glandular structure it is quite aptly termed adenocarcinoma. Years ago we spoke of benign adenoma of the rectum or bowel but no longer is it considered a benign growth for this region. Even though they are very slow growing and may metastasize only after a period of years, they are potentially malignant from their inception. The next type is the papillary carcinoma characterized by the epithelial element arranging itself, not in a glandular manner, but over stalks of supportive connective tissue which form a protruding polypoid mass into the lumen of the gut. This type as in the case of the adeno-

carcinoma, tends toward rapid unruly proliferation. At the mucocutaneous junction there may be a basal cell carcinoma. That type is, I must say, not of the rectum; it is really just outside the confines of the latter. However, I thought it might be well to mention it at this time. The basal cell carcinoma was formerly called the rodent ulcer. It is notoriously slow to metastasize, if at all. However, this epithelial growth must be included in the malignant group. The last type that I shall mention is the epidermoid carcinoma or squamous cell carcinoma. Pathologists term it the epidermoid carcinoma because its cells tend to differentiate in a manner similar to that seen in the normal epidermis. This type of growth is quite malignant and tends to metastasize early. Its histopathology is characterized by pearl formation as will be demonstrated in the slides to follow.

Before showing the slides to demonstrate both the gross and microscopic appearance of the new growths of the rectum, I would like to call your attention to one or two points. The mucous polyps of the rectum and lower bowel are in appearance and histology much like the polyps so often seen in the nose and other parts of the body. However, due to hyperplastic changes in the epithelial elements they must be considered as potentially malignant in character. They are frequently multiple in occurrence. Because of the naked-eye appearance of certain forms of chronic inflammatory process of this region there is ample opportunity for the surgeon to err in making the differentiation from carcinoma. I recall having seen large segments of the lower bowel and rectum removed for what appeared grossly to be an infiltrative type of carcinoma, only to have closer examination reveal that chronic amebiasis was the pathology at hand. Amebiasis of the lower bowel may be extremely difficult to differentiate from carcinoma by the naked-eye appearance. This is particularly true of the more chronic forms of amebiasis. In addition to the latter there is chronic bacillary dysentery to consider in the differential diagnosis. In the gross the gut wall may be in such condition from the long standing inflammatory and reparative processes that it is very difficult to tell from carcinoma. With syphilis, of course, the lesion is of the condylomatous type readily mistaken for carcinoma. Chancroid disease is another infection which might readily be confused with carcinoma. Lymphogranuloma inguinale is the virus disease that is so much discussed these days. Even though its occurrence is quite characteristic and the diagnostic aids so satisfactorily established, its manifestations in causing stricture of the rectum makes it worthy of consideration in regard to the topic under discussion. Tuberculosis, particularly if the lesions are ulcerative and situated low down, is worthy of mention in this connection.

Now through the kindness of Dr. Schattenberg, I shall show a few slides that will give the gross and microscopic appearance of the more characteristic malignancies in and about the rectum.

Clinical Manifestations and Diagnosis (Dr. Warren H. Hebert, Department of Surgery): It is true that the diagnosis of carcinoma of the rectum depends upon a history, physical examination which includes a digital examination, and a proctosigmoidscopic survey.

What are the symptoms associated with a primary early malignancy of the rectum? The early symptoms may be grouped under two classes: (1) Rectal consciousness, and (2) some alteration in the normal bowel habit, with or without a gastrointestinal upset. What is meant by rectal consciousness? This is a rather vague term and includes just such vague sensations that arise from the lower bowel, when there is an associated growth in the incipient stage. The early symptoms that appear may be broadly defined as those associated with a so-called "irritable rectum." At first the discomfort is usually noted when there is stool in the region of the growth. In many cases it is an urgency or frequency, a desire to empty the lower bowel. There may or may not be a successful passage; however, it is usually associated with the discharge of small amounts of gas. At this period there may be some tendency towards a sluggish bowel, but rarely is there true constipation or diarrhea. As the lesion progresses in size, symptoms are no longer dependent on the presence of stool in the region of the lesion. There is a sensation of fulness or heaviness, with a feeling as though the lower bowel is never completely empty. Usually excessive gas necessitates frequent expulsions which may or may not be associated with blood streaked mucus. This necessitates frequent visits to the toilet, and it is this that the individual refers to as diarrhea. In the strict sense of the word, their distress more closely resembles a dysenteric type of disturbance.

What is meant by alteration in the normal bowel habit? This implies just what the term suggests and is more or less self-explanatory. Any persistent alteration of normal bowel habit should warrant a complete investigation of the lower bowel. However, in this day of cathartic abuse, enema habit and self treatment, it is very difficult for an individual to interpret the initial warnings. As a rule they are disregarded and it is not until bleeding occurs, that they realize a more serious condition exists. Nothing has been mentioned about rectal bleeding, rectal pain or diarrhea, for the question was asked, "What are the symptoms of an early lesion of the rectum?"

What information is obtained from a digital ex-

amination? It has been said that in approximately 85 to 95 per cent of rectal growths, it is possible to feel the lesion with the examining finger. This statement is entirely correct, but it is not complete for these figures refer to lesions that are in the markedly advanced stages. There are no statistics obtainable as to the relative efficiency of a digital examination during the early stage of development. If such statistics were obtainable, results as to efficiency in early diagnosis would be surprisingly low. Why do we wait for the lesion to progress to such an extent that it comes to meet the index finger when there are methods available to enable us to identify it in the early stage of development? Such knowledge is obtained from an endoscopic examination. The value of rectal endoscopy cannot be over-emphasized. This procedure affords an opportunity to inspect the gross appearance of the early lesion and at this time a specimen of tissue is removed for microscopic examination. The general characteristics of the growth are determined by its size, extent and location. It is important to determine whether or not one or more walls of the bowel are involved. The degree of obstruction can be more accurately estimated by the size of the lumen in the region of the growth, than by the general clinical history. The degree of mobility and the extent of fixation of the bowel should be accurately estimated. With this information, it is possible for the surgeon to weigh the various factors, and estimate which form of therapy is most adaptable to the individual case.

What is the differential diagnosis of carcinoma of the rectum? In the strict sense of the word there is no differential diagnosis, for any lesion of the rectum that has the characteristics of malignancy is a malignant growth until it is proved otherwise. Should two or three specimens of tissue removed reveal that the tissue is not of a malignant nature, then the growth becomes a benign one. In other words, there is no accurate method of excluding a malignant lesion until a specimen of tissue removed at the time of an endoscopic examination has been reported as nonmalignant. Benign and malignant growths so shrewdly masquerade as one another that no accurate diagnosis can be made from a digital or a gross examination alone.

What is the value of a barium enema in the diagnosis of carcinoma of the rectum? Briefly, it has no place whatsoever in the diagnosis of this lesion. Why should we depend upon a contrast method of diagnosis when a direct examination is so readily available?

In conclusion, it is to be said that any consciousness of the rectum, regardless of its nature, should be interpreted as the earliest symptom of a lesion in this particular region. It is true that a digital examination does disclose the majority of rectal lesions when in the far advanced stage; however, since a direct means of examination is available, these lesions should be noted in the early stage of development. Rectal endoscopy not only affords an opportunity to study the general characteristics of the growth, but it enables a specimen of tissue to be removed for a histopathologic study, which is the only accurate method of establishing a diagnosis.

Roentgen Ray Therapy in Rectal Carcinoma: (Dr. J. N. Ané, Department of Roentgenology): Roentgen ray therapy may be applied to all cases and stages of rectal carcinoma and may be divided into three main types: (1) Irradiation preliminary to surgery, radium, surgical diathermy or a combination of these; (2) radiation following one or more of these procedures; (3) roentgen ray therapy alone. Roentgen ray therapy is never employed alone except for palliation, in those cases in which surgical procedures and the use of radium are impossible.

While the treatment of carcinoma of the rectum may be considered primarily surgical in a number of cases, the operability in a large series of cases when first seen varies from 30 to 50 per cent. In the clinical classification it has been found that Class A cases, in which the lesion is limited to the rectal mucosa, comprise only 15 per cent. Class B cases, with involvement of the muscularis, make up 35 per cent of the total and Class C, with involvement of lymphatics, 50 per cent. In a series of 1,727 cases reported by Rankin, the lesions were considered inoperable in 55 per cent of cases, but in only 35 per cent was resection possible at operation. In some cases in which radical resection is employed complete removal of all tumor cells is not possible and this is reflected in the number of five-year cures. The highly malignant Grade IV cases frequently have metastasized before the primary lesion has reached any considerable size. External roentgen ray therapy with or without radium therapy is offered as a preoperative procedure to increase the number of five-year cures in selected cases and to obtain greater palliation in others.

Roentgen ray therapy alone would be an ideal method of radiation therapy if it were possible to supply a devitalizing dose to deep-seated tumors. When it is employed preoperatively or preliminary to radium therapy it has been found of definite benefit to the patient. The symptoms are reduced, the patient experiences an increased sense of well-being, and in many cases may gain weight and strength. It thus increases the patient's ability to withstand operation or radium therapy. The effect on the tumor mass is shown by a decrease or disappearance of the area of ulceration with lessening in the degree of infection. Bleeding is in-

variably arrested and there is a decrease in the amount of mucus, which adds to the patient's comfort. The tumor mass becomes smaller and more localized and it is not unusual to have a marked change in movability. When external radiation is employed preliminary to radium therapy the dosage of radium or radon necessary to irradiate effectively the mass is decreased and a smaller dose may be employed. It has been suggested that Grade IV cases should be treated always by external high voltage therapy and followed by the interstitial implantation of radon seeds or the application of radium plaques. While these methods employed alone might be ineffective, the combination of the two in selected cases frequently delivers an effective devitalizing dose to the malignant cells.

The optimal period of time which should be allowed to elapse between radiation and surgery has not been definitely settled. Theoretically surgery should not be performed before the tumor cells have undergone maximum degeneration and inactivity. On the other hand it must be done before cells which have been only slightly damaged become active again. Binkley, of the Memorial Hospital, in selected favorable cases, administers high voltage therapy first. After a period varying from one to six weeks, a colostomy is performed. From one to two weeks later gold radon seeds are implanted, and from seven to fourteen days after the radon, radical resection is performed. Therefore, radical surgery is performed from six to eight weeks after external radiation. Bowing and Fricke, on the other hand, suggest a minimum period of two months, and preferably three months between radiation and surgery. Surgery done within a period of three weeks after radiation is performed in a field, hyperemic and edematous, at the height of the reaction of radiation, in the presence of a frequently ulcerated, infected mass and before the good effects of this therapy can be manifested. Quite frequently, the value of preoperative radiation therapy is grossly underestimated because of early operation.

Postoperative therapy is indicated in those patients in whom it is felt that all of the malignant cells have not been removed. In these patients it is the usual practice, at operation, to employ radon seeds or radium needles in the questionable or known areas of involvement. This should be followed by high voltage roentgen ray therapy with cross-firing of the involved region. Recurrences are as serious as the primary tumor and these may be avoided in a certain group of cases, and in others, prolongation of life with palliation will result, following adequate postoperative therapy.

A large group of rectal carcinoma is made up of the inoperable cases. The rather recent modifications and improvements in radiation therapy have done much to increase the five-year cure rate and the degree of palliation obtainable in these cases. In properly selected cases, high voltage therapy combined with radium therapy has been found of great value. The plan of treatment in this group of inoperable cases should be carefully selected. Inoperable cases may be divided into three classes. The first class consists of those patients in good physical condition who are able to withstand an intensive radium and roentgen ray reaction. This therapy results in disappearance in activity of the tumor or a marked lessening of symptoms. The second class comprises those patients in fair condition with a large tumor and mild infection. These patients should have repeated moderate roentgen ray and radium therapy and it is thus possible to keep them relatively comfortable for a period of from one to two years. The third class is made up of those unfortunate individuals in very poor physical condition associated with rather severe infection of the tumor area. It is in this group that over-radiation is to be carefully avoided for while slight prolongation of life might result, the discomfort and increase in symptoms produced by intensive radiation seldom compensate for the slight extension of life. Thus, in approximately 50 per cent of inoperable cases, radium therapy may be impossible because of the condition of the patient or because of the location of the tumor, and external radiation by high voltage therapy will remain as the only procedure for palliation.

The technic of high voltage radiation therapy must be carefully selected for the individual case, and depends upon the condition of the patient, the operability and type of tumor, and the future plans of therapy to be followed. In the average case, three anterior, three posterior, and one perineal field are employed and from 600 to 1,000 R. are used over each field.

In the selection of technic for external radiation the lymphatic drainage and routes of spread of the tumor must be carefully considered. The lymphatics of the rectum pass to the rectal glands which lie in the muscular coat, next to the glands back of the rectum along the superior hemorrhoidal artery, and finally pass to the sacral and other pelvic glands. A lesion around the anus being epithelial drains through the superficial lymphatics of the skin, and those in the rectal canal through the pelvic lymphatics. Unless the upper lymphatics are blocked, there is very rarely any drainage downward.

Of the greatest importance in the treatment of rectal carcinoma are the proper selection of the methods of treatment available for the individual case and the close cooperation of the pathologist, surgeon, physicist and radiologist.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR

November 1 Board of Directors, Orleans Parish Medical Society, 8 p. m.

November 1 Pathologic Conference, Hotel Dieu, 8:15 p. m.

November 2 Eye, Ear, Nose and Throat Hospital Staff, 8 p. m.

November 3 Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

November 3 Hutchinson Memorial Clinic Staff, 8 p. m.

November 3 Mercy Hospital Staff, 8 p. m.

November 8 ORLEANS PARISH MEDICAL SOCIETY, 8 p. m.

November 10 Touro Infirmary Staff, 8 p. m.

November 12 French Hospital Staff, 8 p. m.

November 15 Hotel Dieu Staff, 8 p. m.

November 16 Charity Hospital Medical Staff, 8 p. m.

November 17 Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

November 17 Charity Hospital Surgical Staff, 8 p. m.

November 18 Eye, Ear, Nose and Throat Club, 8 p. m.

November 19 I. C. R. R. Hospital Staff. 12 Noon.

November 22 ORLEANS PARISH MEDICAL SOCIETY, 8 p. m. Election of delegates to the Louisiana State Medical Society and nomination of officers, 1938.

November 23 Baptist Hospital Staff, 8 p. m.

November 24 Clinicopathologic Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

During the month of October the Society held two meetings. On Monday, October 11, the following program was presented:

The Relation of the Medical Social Worker to the Physician.

By: Miss Beatrice Hodge, Director Social Service Department, Charity Hospital of New Orleans.

Some Phases of the Social Security Act.

By: Dr. Elizabeth Wisner, Dean, School of Social Work, Tulane University.

The State Hospital and Welfare Boards.

By: Mr. A. R. Johnson, Director, State Department of Public Welfare and Hospitals.

The Organization and Operation of the New Orleans Department of Public Welfare.

By: Mr. Richard Foster, Director, New Orleans Department of Pubic Welfare.

The Federal and State Programs of Maternal and Child Welfare.

By: Dr. R. W. Todd, Director, Bureau of Parish Health Administration.

The Relation of Preventive Medicine to the Federal and State Welfare Program.

By: Dr. W. H. Perkins, Professor of Preventive Medicine and Head of the Department, Tulane University.

Owing to the illness of Mr. Johnson, Dr. O. P. Daly read his paper.

This meeting was very well attended by members and guests.

The meeting held October 25 was under the auspices of the New Orleans Gynecological and Obstetrical Society. The following papers were presented:

1. History of Cesarian Section by Dr. Joseph W. Reddoch.
2. Causes from Anatomical Standpoint by Dr. H. Cummings.
3. Indications for Cesarian by Dr. Walter E. Levy.
4. Contraindications for Cesarian by Dr. M. Lyon Stadiem.
5. Choice of Operation by Dr. Peter Graffagnino.
6. Low Cervical Section by Dr. John F. Dicks.
7. Classical Section by Dr. Philips J. Carter.
8. Motion Picture by Dr. George A. Mayer.
9. Pre-and Postoperative Care and Complications by Dr. Conrad G. Collins.
10. Anaesthesia in Cesarian Section by Dr. Ansel Caine.
11. Statistical Study Over Ten Year Period by Dr. Edward L. King.
12. Summary by Dr. Hilliard E. Miller.

NEWS ITEMS

Dr. Leon J. Menville was elected Vice-President of the American College of Radiology at the recent meeting held in Chicago.

Dr. Maud Loeber was elected President of the Diocesan Council of Catholic Women at its organization meeting held August 8, 1937.

Dr. Edward L. King and Dr. Thomas B. Sellers attended the meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons held at Hot Springs, Virginia.

Drs. W. Rogers Brewster and Elizabeth Lewis were recently appointed medical inspectors of the Orleans Parish School Board.

Dr. Julian Graubarth attended the recent session of the Association of School Physicians held in New York City.

Dr. Emile Naef addressed the Medical Section of the Southern Tuberculosis Conference and the Southern Sanatorium Association, which met in Richmond, Virginia, September 29 through October 1. The subject of Dr. Naef's paper was "Childhood Tuberculosis."

Dr. Robert A. Strong was a guest speaker in pediatrics before the Kansas City Southwest Clinical Society, which held its meeting in Kansas City on October 4-7. Dr. Strong addressed the open meeting to the public on "Preventive Pediatrics" and in addition gave several talks on pediatric subjects on the programs which followed during the ensuing days.

Dr. John H. Musser attended the meeting of the American Climatological and Clinical Association in Baltimore on October 11, 12, and 13, where he read a paper entitled "Deficiency Disorders as Observed in the Far South." Dr. Musser was elected Vice-President for the coming year.

Dr. Charles S. Holbrook was chosen President-Elect of the Southern Psychiatric Association at the third annual convention of the organization, held recently in San Antonio, Texas.

Dr. Walter J. Otis addressed the convention of the Southern Psychiatric Association on "Childhood's Early Symptoms of Mental Disease."

The following doctors from the Society attended the meeting of the Central Association of Obstetricians and Gynecologists, held in Dallas, Texas, October 14, 15, and 16: Drs. H. B. Alsobrook, Philips J. Carter, Peter Graffagnine, M. M. Hattaway, Adolph Jacobs, Wm. D. Phillips, Joseph W. Reddoch, Thomas B. Sellers, and H. Vernon Sims.

Dr. Alton Ochsner attended the meeting of the Interstate Postgraduate Medical Assembly, which was held in St. Louis, Missouri, from October 18 to 22. On Tuesday, October 19, he addressed the assembly on "Pitfalls in the Diagnosis of Acute Abdominal Conditions."

Dr. Ochsner also attended the Clinical Congress of the American College of Surgeons, which was held in Chicago from October 25 to 29. At this meeting Dr. Ochsner presented a paper on "The Tragedy of Accidents", and also took part in the Conference on Graduate Training for Surgery, giving a general presentation of the subject. Dr. Ochsner is a member of the Board of Regents of the College and attended the meetings of that Board while in Chicago.

Other members of the Department of Surgery who attended the meeting of the American College of Surgeons in Chicago were Drs. Ambrose H. Storck and Michael E. DeBakey.

Dr. C. C. Bass, Dean of the Tulane University School of Medicine, attended the annual meeting of the Association of American Medical Colleges in San Francisco, October 25, 26, and 27.

Dr. Manuel Garcia, for the past four years associated with the J. T. Nix Clinic, has received an appointment as assistant resident at the Cancer Memorial Hospital of New York, the appointment to become effective on January 1, 1938.

Dr. Earl Conway Smith, representing the New Orleans Graduate Medical Assembly, addressed the East Mississippi Medical Society in Merdian, Mississippi, on October 14. The title of subject presented was "Medical Treatment of Pelvic Inflammatory Diseases of Women, with Special Reference to the Use of the Elliot Treatment Regulator."

The Faculty Club of Louisiana State University Medical Center held its first meeting for the Session 1937-1938 on Friday, October 29, at 8 p. m. The following program was presented:

1. Application of the Solid Angle and the Magnetic Shell to the Analysis of the Precordial Lead: By Drs. R. H. Bayley and J. L. Gouaux.

2. The Diagnosis of Placenta Previa by Means of the Roentgen Ray, with illustrations: By Drs. P. J. Carter and C. P. Cabibi.

3. A Study of the Cause of Death from Lung Abscess: By Drs. James D. Rives and Louis A. Monte.

REMOVALS

Dr. James J. Baron from 1012 to 1101 Maison Blanche Bldg.

Dr. Arthur Caire from 3439 Prytania Street to 1415 Delachaise Street.

Dr. Arthur Caire, Jr. from 3439 Prytania Street to 1415 Delachaise Street.

Dr. Sidney M. Copland from 3439 Prytania Street to 1415 Delachaise Street.

Dr. B. J. DeLaureal from 3503 Prytania Street to Hebert Bldg., 3445 Prytania St.

Dr. Edmond L. Faust from 502 Medical Arts Bldg. to Hebert Bldg., 3445 Prytania St.

Dr. Frederick L. Fenno from 220 Physicians & Surgeons Bldg. to Hebert Bldg., 3445 Prytania St.

Dr. Caroline Mims from 1002 to 903 Pere Marquette Bldg.

Dr. Alberto Prieto from 502 Medical Arts Bldg. to Hebert Bldg., 3445 Prytania Street.

Dr. H. R. Unsworth from 503 Legendre Bldg. to 819 Maison Blanche Bldg.

Dr. Charles T. Williams from 3439 Prytania Street to 1415 Delachaise St.

The following doctors were elected to membership:

Active: Drs. Richard L. Buck and Lang F. Holland.

Associate: Dr. Esdras J. Lanois.

TREASURER'S REPORT

Actual Book Balance: 8/31/37	$3,115.36
September Credits	$ 190.19
Total Credits:	$3,305.55
Expenditures:	$ 414.53
Actual Book Balance: 9/30/37:	$2,891.02

LIBRARIAN'S REPORT

The Library has loaned to doctors, during July and August, 1192 books and journals, or more than two to each member of the Society. An additional 435 have been loaned to students, making a total of 1645 for the two months. It is interesting to note that during the vacation months of July—September 2,321 books and journals were loaned to doctors and students; this is an increase of about 100 over the same period for 1936. These figures do not include the great use of books and journals within the Reading Rooms.

Members of the staff have collected material on the following subjects during the period from July—September:

Chemistry of dyes
Immediate pre-and postoperative care
Embolectomy
Arteriography
Menopause
Family attitude toward the chronically diseased
Neoplasms of bone
Resections on mandible
Hermaphroditism
Postoperative pulmonary complications
Solitary tuberculous abscess of the liver
Malignancy of the uterus in the young
Regional ileitis
Fissure of anus
Bursitis of olecranon
Tic douloureux—technic of treatment
Relation of hormones and vitamins
Technic of the Rubin test
Hyperinsulinism
Insulin in the treatment of dementia praecox
Prostigmin in myasthenia gravis
Fecal fistula
Magnesia
Benign strictures of rectum
Proctitis

During August and September 139 volumes were added to the Library. Of these 75 were received by gift, 38 by binding and 26 from the New Orleans Medical and Surgical Journal. Notation of new books of recent date is given below.

Beginning with October 1, the Library has resumed its evening hours of opening, 7-11 on Monday through Friday of each week.

NEW BOOKS

August-September

Majocchi, Andrea—Life and Death. 1937.

Bogert, L. J.—Dietetics Simplified. 1937.

Shryock, R. H.—Development of Modern Medicine. 1936.

Appel, K. E.—Practical Examination of Personality and Behavior Disorders. 1936.

Warbasse, J. P.—Surgical Treatment. 4 v. 1937.

American Foundation—American Medicine. 2 v. 1937.

Tuft, Louis—Clinical Allergy. 1937.

Kurzrok, Raphael—Endocrines in Obstetrics and Gynecology. 1937.

Morton, R. S.—A Woman Surgeon. 1937.

Saphir, Otto—Autopsy Diagnosis and Technique. 1937.

Muir, Robert—Textbook of Pathology. 1936.

Sinclair, J. G.—Anatomy of the Fetal Pig. 1936.

Cannon, W. B.—Autonomic Neuro-Effector Systems. 1937.

Lord, E. E.—Children Handicapped by Cerebral Palsy. 1739.

Barnes, T. C.—Textbook of General Physiology. 1937.

Fisher, W. A.—Ophthalmology, Retinoscopy and Refraction. 1937.

Wilson, D. W.—Laboratory Manual of Physiological Chemistry. 1937.

Cunningham, Eileen—Classification of Medical Literature. 1937.

Kantor, J. L.—Synopsis of Digestive Diseases. 1937.

Barnes, T. C.—Laboratory Manual of General Physiology. 1937.

Warner, A. A.—Endocrinology. 19937.

U. S. Pharmacopoeial Convention—U. S. Pharmacopoeia. 1937.

LOUISIANA STATE MEDICAL SOCIETY NEWS

THE SOUTHERN MEDICAL ASSOCIATION

PROGRAM

Tuesday, November 30, 9:00 a. m. Registration, Municipal Auditorium. This has been designated as New Orleans Day. The Program Committee, of which Dr. Frederick L. Fenno is chairman, has arranged for the holding of two medical sections and one surgical section in the morning and in the afternoon; also an Eye, Ear, Nose and Throat Section in the morning and a Gynecological and Obstetrical Section in the afternoon. The program will be presented entirely by physicians of New Orleans. There will be no discussion.

Tuesday, 8 p. m. Public Meeting, Municipal Auditorium. Music furnished by the Loyola University Band.

Wednesday, December 1, 9:00 a. m. to 5:00 p. m. Scientific sessions, Municipal Auditorium.

Wednesday, 8 p. m. Ball Room, Roosevelt Hotel, President's Meeting followed by President's Reception at 9:30 p. m. in the Ball Room of the St. Charles Hotel.

Thursday, December 2, 9:00 a. m. to 5:00 p. m. Scientific Sessions. 12:30 p. m. Fraternity luncheons; places to be designated at the time of registration. 6:30 p. m. Alumni dinners and reunions; places to be designated at the time of registration. A local doctor has been appointed to take care of the plans of each university reunion dinner.

Friday, December 3, 9:00 a. m. to 5:00 p. m. Scientific Sessions, Municipal Auditorium. Golf Tournament. Arrangements have been made for tournament playing throughout the meeting for trophies played for each year by the Southern Medical Association and for prizes awarded by the local committee of which Dr. Lucien A. Fortier is Chairman.

WOMAN'S AUXILIARY

Mrs. George J. Taquino, Chairman, Ladies' Entertainment Committee, announces the following program:

Tuesday, 9 a. m.—Registration, Roosevelt Hotel, headquarters for all women's activities.

Wednesday, 10 a. m. First meeting of the Woman's Auxiliary, Southern Medical Association, Mrs. Frank N. Haggard, President, presiding. 12:30 p. m. luncheon in the Vieux Carré followed by a specially directed tour with guides through the French Quarter. 5 p. m. refreshments at Madame Johns' Legacy in the Vieux Carré.

Wednesday, 8 p. m. President's meeting, Ball Room, Roosevelt Hotel. 9:30 p. m. President's Reception and Ball in the Ball Room of the St. Charles Hotel.

Thursday, 9 a. m. Meeting of the Woman's Auxiliary. 9 a. m. Women's golf tournament at the Metairie Golf Club; 12:30 p. m. Roosevelt Hotel, Southern Medical Auxiliary Luncheon, Mrs. Frank N. Haggard, President, presiding; 2:30 p. m. Automobile tour of the city including Lake Shore Drive and Shushan Air Port with a short visit to the old colonial homes on the return trip.

Thursday, 8 to 10 p. m. Entertainment, Roosevelt Hotel.

Friday, 9 a. m. Harbor trip on the Yacht "Louisiana" starting from Ead's Plaza.

Lucien A. Ledoux, M. D.,
General Chairman
Committee of Arrangements.

CHAIRMEN AND COMMITTEES OF ARRANGEMENTS

General Chairman: Dr. Lucien A. LeDoux.

Vice General Chairmen: Drs. Emmett L. Irwin, Leon J. Menville and Urban Maes.

Secretary: Dr. John J. Archinard.

Honorary Vice-Chairmen: Drs. C. C. Bass, J. M. Batchelor, Geo. S. Bel, Rigney D'Aunoy, Frank Gomila, Charles Horton, Hiram W. Kostmayer, Rudolph Matas, James T. Nix and Joseph A. O'Hara.

Alumni Reunions and Fraternity Luncheons: Dr. Oscar W. Bethea, Chairman; Dr. Wm. B. Clark, Wm. D. Phillips, Robert A. Robinson and P. B. Salatich.

Entertainment: Dr. Val H. Fuchs, Chairman; Drs. A. E. Fossier, Jerome E. Landry, Walter J. Otis and George J. Taquino.

Finance: Dr. Louis Levy, Chairman; Drs. Frank J. Chalaron, L. C. Chamberlain, Robert L. Gordon, Francis E. LeJeune and Walter E. Levy.

Fishing: Dr. Cassius L. Peacock, Chairman; Drs. F. Temple Brown, Allan Eustis, Geo. H. Hauser and J. Kelly Stone.

Golf: Dr. Lucien A. Fortier, Chairman; Drs. Charles A. Bahn, Edgar Burns, Morell W. Miller, and Robert M. Willoughby.

Hotels: Dr. M. T. Van Studdiford, Chairman; Drs. E. E. Allgeyer, John J. Irwin, Joseph C. Menendez and M. L. Stadiem.

Information: Dr. Randolph Unsworth, Chairman; Drs. H. E. Bernadas, Frank Chetta, R. A. Oriol and Wm. H. Seemann.

Lanterns and Screens: Dr. John Signorelli, Chairman; Drs. Gilbert C. Anderson, C. E. Gorman, Daniel J. Murphy and H. V. Sims.

Membership: Dr. William A. Wagner, Chairman; Drs. Robert Bernhard, S. M. Blackshear, C. Grenes Cole and Henry A. Macheca.

Program and Clinics: Dr. Frederick L. Fenno, Chairman; with the President, Dr. James T. Nix and the General Chairman, Dr. Lucien A. LeDoux.

Publicity: Dr. James D. Rives, Chairman; Drs. Amédée Granger, Waldemar R. Metz, P. T. Talbot, and Roy W. Wright.

Scientific Exhibits: Dr. Shirley C. Lyons, Chairman; Drs. Donovan C. Browne, John Couret, Marcy J. Lyons, and Neal Owens.

Technical Exhibits: Dr. H. Theodore Simon, Chairman; Drs. Wilmer Baker, L. L. Cazenavette, George D. Feldner, and Edmond Souchon.

Transportation: Dr. Daniel N. Silverman, Chairman; Drs. Philips J. Carter, Alex R. Crebbin, Roy E. de la Houssaye, and M. O. Miller.

Trap Shooting: Dr. Chaille Jamison, Chairman; Drs. C. L. Peacock, Rawley M. Penick, Jr., John G. Pratt, and Robert A. Strong.

Women's Physicians: Dr. Ruth G. Aleman, Chairman.

LADIES' ENTERTAINMENT COMMITTEE

General Chairman: Mrs. George J. Taquino.

Vice General Chairmen: Mrs. Isidore Cohn and Mrs. H. Vernon Sims.

Hostess Committee: Mrs. Lucien Alexander, Chairman; Mrs. J. T. Nix and Mrs. J. B. Larose, Vice-Chairmen; Mesdames H. B. Alsobrook, Gilbert C. Anderson, G. D. Feldner, C. L. Brown, D. C. Browne, J. E. Brierre, W. R. Buffington, W. R. Brewster, H. E. Bernadas, A. R. Crebbin, Frank Chetta, F. J. Chalaron, Ralph Christman, P. Graffagnino, Chas. Hume, W. C. Hava, Wm. H. Harris, Wm. Kohlmann, F. J. Kinberger, R. C. Lynch, M. G. Lynch, Walter E. Levy, E. L. Leckert, D. J. Murphy, R. J. Mailhes, Louis Ochs, H. W. E. Walther, J. C. Menendez, P. A. Phillips, P B. Salatich, J. P. Wahl, J. W. Warren, Arthur Vidrine, E. B. Vickery.

Registration Committee: Mrs. Frederick L. Fenno, Chairman; Mrs. Lucien A. LeDoux, Mrs. J. E. Landry and Mrs. E. E. Allgeyer, Vice-Chairmen; Mesdames W. P. Gardiner, A. F. Hebert, John S. Dunn, H. Theodore Simon, M. F. Meyer, T. T. Gately, A. I. Weil, Jack Strange, Ansel Caine, H. N. Blum, Shirley C. Lyons and A. Mogabgab.

Transportation Committee: Mrs. H. L. Weinberger, Chairman; Mrs. E. S. Hatch, Vice-Chairman; Mesdames J. R. Hume, Howard Mahorner, S. J. Rosenthal, Chas. Odom, Paul G. Lacroix, Jos. D'Antoni, Val H. Fuchs, Louis Levy and Geo. H. Hauser.

Luncheons Committee: Mrs. Chaille Jamison, Chairman; Mrs. R. E. Stone, Vice-Chairman; Mesdames S. M. Blackshear, Edgar Burns, J. H. Musser and H. W. Kotsmayer.

Decorations Committee: Mrs. L. J. Menville, Chairman; Mrs. P. J. Kahle, Vice-Chairman; Mesdames A. L. Levin, J. K. Stone, C. Grenes Cole and D. N. Silverman.

Vieux Carré Committee: Mrs. I. I. Lemann, Chairman; Mrs. P. C. DeVerges, Vice-Chairman; Mesdames Randolph Lyons, E. L. Faust, John Oechsner and S. S. Grosjean.

Colonial Homes Tour: Mrs. W. H. Seemann, Chairman; Mrs. Robert Bernhard, Vice-Chairman; Mesdames Roy E. de la Houssaye, Willard R. Wirth and Marcus Feingold.

Evenings' Entertainment: Mrs. Ralph Hopkins, Chairman; Mrs. J. Pratt, Vice-Chairman; Mesdames Chas. J. Bloom and John Smyth.

Refreshments Committee: Mrs. C. L. Peacock, Chairman; Mrs. A. J. Hockett, Vice-Chairman; Mesdames C. C. Bass, John F. Oakley and J. Ane.

Golf Committee: Mrs. Amédée Granger, Chairman; Mrs. A. D. Mouledous, Vice-Chairman; Mesdames Edwin L. Zander, R. C. Voss and Marion Souchon.

Publicity Committee: Mrs. Edwin R. Guidry, Chairman; Mrs. M. Bradburn, Vice-Chairman; Mesdames J. A. O'Hara and Carl Granberry.

AN INVITATION

To the Profession of Louisiana: Greetings!

This is to appeal to you for your cooperation by soliciting your application for membership in the great Southern Medical Association, which will meet in New Orleans this fall.

Briefly, these are the advantages: By joining now you will be entitled to membership which runs through the meeting time and until end of next year; you will be joining the next to the largest organization of medical men in America and one which is devoted especially to problems of interest to the profession in the South; you will receive a Journal which is up-to-date and full of live topics (papers read at previous meetings and other matters) which alone is worth more than the price of membership. The dues, including the Journal, are only $4.00 per year and I know of no way in which you can better invest $4.00 for the improvement of yourself and for the good of your profession.

Trusting to have your prompt cooperation and anticipating the pleasure of greeting you in New Orleans on November 30 next, I am

Cordially and fraternally yours,

Arthur A. Herold, M. D.,

Councilor for Louisiana.

TRI-STATE MEDICAL SOCIETY

The Tri-State Medical Society met in two day sesion in Shreveport, October 27 and 28. A splendid program was provided for the large attendance, probably the most outstanding presentation being that of Surgeon-General Parran of the United States Public Health Service, who talked on his favorite subject, prevention of syphilis.

TRI-PARISH MEDICAL SOCIETY

The Tri-Parish Medical Society had its regular

meeting at Tallulah on October fifth. The following members were present: Drs. J. P. Davis, W. K. Evans, G. S. Hopkins, P. S. Parrino and William H. Hamley from East Carroll Parish; D. W. Kelly, B. L. Bailey and E. D. Butler from West Carroll Parish; G. W. Gaines, E. O. Edgerton, A. T. Palmer, D. H. Allen, Jr., O. H. Armstrong, L. Stevens, H. S. Provine, W. P. Yerger from Madison Parish; Joseph Whitaker, T. G. Ward, Donovan Davis and B. G. Moss from Tensas Parish. Drs. C. D. Powell, Franklin Parish, E. L. Sanderson and H. G. F. Edwards, Shreveport, and J. B. Vaughan and A. Scott Hamilton, Monroe, were guests of the society.

The first paper, entitled "Cancer Is Curable," was presented by Dr. Edwards and was illustrated with lantern slides. Dr. Sanderson, who is superintendent of the Shreveport Charity Hospital, read a paper on "Treatment of Indigent Patients in the Future".

Drs. T. G. Ward and O. H. Armstrong were elected to active membership. A resolution from the Shreveport Medical Society was read and adopted, and a copy sent to the secretary of the Louisiana State Medical Society.

William H. Hamley, M. D., Sec.

THE BI-PARISH MEDICAL SOCIETY

The members of the Bi-Parish Medical Society met as guests of Dr. and Mrs. S. L. Shaw in their log cabin lodge on October 6, 1937. The following members and guests were present: Drs. Jones, Irwin, Ayo, Miller, Pargen, Roberts, Shaw, Toler, Staff, and Long; Mesdames Ayo, Pargen, Roberts, Toler, Miller, Shaw and Miss Tate.

Scientific program consisted of an excellent paper by Dr. Tom Spec Jones of Baton Rouge, on "Typhus Fever." Dr. Jones' paper was freely and favorably discussed by physicians present.

A vote of thanks was extended Dr. and Mrs. Shaw for their superb entertainment and dinner.

The society adjourned to meet in December in the Rist Hotel, Clinton, Louisiana.

E. M. Toler, M. D., Sec.

ST. TAMMANY PARISH MEDICAL SOCIETY

The St. Tammany Parish Medical Society met October 1, at the Southern Hotel, Covington, in regular communication. The business of the Society was quickly attended to, and the real feature of the meeting followed, which was to do honor to our Congressman, Dr. John K. Griffith. In fact, the meeting had been designated as "Griffith Night". Among the prominent visitors present were Dr. L. L. Ricks, Coroner, Tangipahoa Parish; Dr. L. C. Del Torio, C. C. Camp Physician; Hon. Jas. Burns, District Attorney; Hon Vic Planche, Representative in the Legislature from this parish.

Before turning the meeting over to Dr. Griffith, radio facilities having been provided, Chief Justice Black's address was heard. Dr. Griffith was then presented and he gave us a very interesting talk on his experiences and observations while serving his "freshman" course in Congress.

The next meeting will be in Slidell in December.

H. D. Bulloch, M. D., Sec.

ATTENTION PARISH SECRETARIES

Please cooperate by answering communications. Historical data of your parish are an important part of the history of the state society. Do not fail your parish.

Despite continual effort to obtain historical data from the parishes for ten years regarding especially early settlers and portraits of officers of 1929, needed to satisfy the requirements of our work, much material is still lacking, we regret to say, through lack of cooperation of many secretaries or members in parishes to whom we have appealed for data. This work is intended entirely for the benefit of the profession of the state, but we are much delayed in our progress because of the failure of many secretaries or other members of parish societies to whom we have addressed repeated communications to respond to our inquiries.

R. Matas, M. D., Chairman,
Committee on History of L. S. M. S.

NEWS ITEMS

At a meeting of the American College of Radiology, which met at the same time as the Fifth International Congress of Radiology in Chicago, Dr. Leon J. Menville was elected its Vice-President. Dr. Menville participated in a radio broadcast sponsored by the Congress and spoke on a radiological subject.

There is an opening for a physician at Epps, Louisiana, with possibilities for a good country and village practice. Persons interested may contact Dr. B. L. Bailey at Epps, either personally or by letter.

The Southeastern Branch Society of the American Urological Association will meet at the Tutwiler Hotel in Birmingham, November 5 and 6, 1937. Dr. Edgar Burns is on the Executive Committee and information concerning the meeting may be obtained from him. On a program of nine papers, one of them will be presented by Drs. Henry W. E. Walther and Robert M. Willoughby, of New Orleans, and is entitled "Hormonal Treatment of Benign Prostatic Hypertrophy."

The annual scientific meeting of the Georgia Pediatric Society will be held in Atlanta on

Thursday, December 9, 1937. Among the guest speakers will be Dr. Ralph S. Muckenfuss, Director of the Department of Health, Bureau of Laboratories, New York City; Dr. Priscilla White, attending Physician, Deaconess Hospital, Boston; Dr. Joseph Brennemann, Professor of Pediatrics, University of Chicago, and Chief of Staff, Childrens' Memorial Hospital, Chicago.

Roger W. Dickson, M. D., Pres.
Georgia Pediatric Society.

One of the outstanding figures in medicine, although not a doctor, died October 15, 1937. Mr. Henry Kendall Mulford, was the founder and builder of Mulford's biological house. He was the first to distribute commercially antitoxins; he was active in the effective preparation of curative serums and vaccines. Mr. Mulford was widely honored during his career. His high standard of ethics, his willingness to cooperate with physicians made him one of the great men in medicine.

COMMUNITY CHEST CAMPAIGN

The fourteenth annual Community Chest campaign extends from November 9-30. Physicians should be very much interested in this campaign to raise money and do all they can to help, because a very goodly proportion of the agencies participating in the Chest appeal are hospitals and organizations which have to do with the health of the community. The doctor should and probably can do more through individual aid than any other: He can encourage his patients and friends to give to a worthy cause.

INFECTIOUS DISEASES IN LOUISIANA

Dr. J. A. O'Hara, Epidemiologist for the State of Louisiana, has furnished us with the weekly morbidity reports for the state, which contain the following summarized information. For the week ending September 18, syphilis led all reported diseases by a wide margin, 150 cases being listed, followed by these diseases which were sufficiently frequent to appear in double figures: 87 cases of hookworm, 55 of pulmonary tuberculosis, 25 each of cancer and malaria, 22 of gonorrhea, 21 of pneumonia and 17 of typhoid fever. During this week, sad to relate, there were reported eight cases of poliomyelitis in eight parishes of the state. One case of typhus fever was reported from Orleans and one case of undulant fever from Rapides Parish. For the week which came to a close on September 25, syphilis again came to the forefront with 135 cases, followed by 39 cases of pneumonia, 35 of malaria, 33 of pulmonary tuberculosis, 27 of gonorrhea, 26 of cancer, 25 of typhoid fever and 13 of diphtheria. The typhoid fever cases were scattered quite well throughout the state; no more than three cases were listed from any one parish except Richland, which had four. During this week, there were five cases of poliomyelitis reported from five different parishes; two cases of typhus fever were reported from Beauregard and one from Rapides Parish. For the thirty-ninth week of the year, ending October 2, syphilis jumped up with 260 cases reported, followed by 39 each of pulmonary tuberculosis and malaria, 30 of gonorrhea, 27 of cancer, 20 of pneumonia, 17 of typhoid fever and 14 of diphtheria. Only three cases of poliomyelitis were reported this week, one each from Bienville, Orleans and Union Parishes. The Orleans Parish case was imported. There was one instance of typhus fever in East Baton Rouge Parish and one of undulant fever in Caddo. For the week closing October 9, syphilis again was approximately five times more frequent than any other disease, 250 cases being reported; this was followed by 45 cases of malaria, 36 of pulmonary tuberculosis, 32 of cancer, 28 of pneumonia, 19 of gonorrhea and 11 of typhoid fever. Of the four cases of poliomyelitis reported this week, all came from Orleans, but one case was imported. For the week ending October 16, there was quite a fall in the number of cases of syphilis, 141 instances, followed by 56 of malaria, 50 of hookworm, 48 of pulmonary tuberculosis, 26 of gonorrhea, 23 each of diphtheria and pneumonia, 22 of cancer and 10 each of influenza and whooping cough. Only one case of poliomyelitis was reported this week, most gratifying. It is also a pleasure to report that for the past five weeks diphtheria has been below the average; undoubtedly, this is due to the efforts of physicians to immunize children against the disease. Of the more unusual diseases a case of typhus fever was reported from East Baton Rouge Parish, and one from East Feliciana Parish. A case of lethargica encephalitis was reported from Orleans Parish.

HEALTH OF NEW ORLEANS

The Department of Commerce, Bureau of Census, reports that for the week ending September 11, there was a considerable drop in the number of deaths in New Orleans, there being 45 less than the previous week. These were divided 81 in the white and 44 in the negro population. There were 14 deaths this week in infants under one year of age. There was a slight decrease in the death rate for the following week, ending September 18, 120 deaths equally divided between the two races. The infant death rate was reasonably small, 12 deaths being reported. For the week closing September 25, 131 deaths were listed of which 75 were white and 56 negro; 11 were in children who had not yet attained the age of one year. The total number of deaths, namely 153, for the week ending October 2, was slightly below the aver-

age for the corresponding week. These deaths took place in the following numbers, 97 in the white and 56 in the negro race. Sixteen deaths were in infants. It is pleasant to note that for the week which came to a close October 9, there were 22 less deaths than for the preceding week, there being 131, segregated 83 white and 48 negro, with 11 deaths in small children.

THE NORTH MISSISSIPPI COMMUNITY HOSPITAL

The opening of the North Mississippi Community Hospital at Tupelo, Mississippi, on October 3, gives the northeastern part of this state a modern, fireproof, well-equipped 50-bed hospital held in trust for the public, open to all qualified physicians and designed to serve the sick without discrimination.

This is the eighth such hospital to be built with the aid of the Commonwealth Fund of New York, which is now undertaking to provide one new hospital each year for a predominantly rural community which will agree to meet its share of costs and to run the institution in accordance with generally accepted standards. The ninth in the group is now under construction at Ada, Oklahoma, and the tenth has been awarded to the community centering in Provo, Utah.

The Fund began this project in 1926 as an experiment in meeting the need of rural communities for better medical and other health services. It was known that adequate hospital facilities were lacking in many rural districts, that recent graduates from medical schools were not entering rural practice in proportion to local needs, and that in spite of substantial progress in some parts of the country, health services in rural areas were not so well developed as those usually found in cities. It was assumed that the presence of well planned and well conducted hospitals would to some degree correct this situation, and experience in half a dozen different states indicates that the hope was justified.

The present plan is to aid in establishing hospitals having a capacity of between 25 and 50 beds and easily accessible to a rural community having a population large enough to make good use of such accommodations and capable of meeting operating costs. The hospital may either be a totally new institution, or may replace existing facilities which are clearly inadequate. The Fund furnishes plans, specifications, and architectural supervision for the construction, and not less than $200,000 as a contribution toward capital costs. It advises in the organization of the hospital corporation and the medical staff, offers assistance in meeting the administrative problems of the early years and provides a number of fellowships for postgraduate study by members of the medical staff.

Communities needing a 50-bed hospital are required to raise from $40,000 to $60,000 for their share of the capital cost and must provide in addition a site (with service connections) and from $10,000 to $15,000 to meet the deficit of the first year's operation. Ownership and administrative responsibility are lodged in a local corporation, organized not for profit, which contracts with the Fund to operate the hospital in agreement with specified standards. These standards are such as to guarantee its integrity as a community institution and to justify its approval by the American College of Surgeons.

Hospitals founded under this program are now operating in Murfreesboro, Tennessee; Farmville, Virginia; Glasgow, Kentucky; Farmington, Maine; Wauseon, Ohio; Beloit, Kansas, and Kingsport, Tennessee.

ALVARENGA PRIZE COMPETITION

The Premio Alvarenga do Piauhy (Brazil) Prize for 1938, about $200, will be conferred by the College of Physicians of Philadelphia on July 14, 1938 "upon the author of the best memorial or unpublished work on any branch of medicine which may be deemed worthy of the prize." The study will be selected either from among contributions published since January 1, 1937 and brought to the attention of the committee before May 1, 1938, by the author or by other sponsors, or from among unpublished studies submitted to the committee in typewritten manuscript and received before May first. Address communications to: The Alvarenga Prize Committee, 19 South Twenty-second Street, Philadelphia, Pa., U. S. A.

NINTH GORGAS MEMORIAL ESSAY CONTEST

Announcement of the Ninth Gorgas Memorial Essay Contest has been made by Admiral Cary T. Grayson, Chairman of the Board of Directors of the Gorgas Memorial Institute, from the office of the institute at 1835 Eye Street, Northwest, Washington, D. C. The essay contests have become an annual feature of the program of personal health education carried on by the institute. High schools throughout the country are invited to enroll. Participation is restricted to students in the third and fourth years of high school.

For the best essay written in each school, a bronze Gorgas medal is awarded and the student so honored represents his school in the State competition. A prize of $10 in cash is given for the best essay in each State. The judges are state officials—the state health office, state superintendent of education and the secretary of state. The state-prize-winning essays are then judged for the

national awards. First Prize is $500 in cash and a travel allowance of $200 for a trip to Washington to receive the prize. Second is $150 in cash and Third Prize $50.

The subject for this year: The Achievements of William Crawford Gorgas and Their Relation to Our Health.

The dates of the contest: October 21, 1937 to January 21, 1938.

Full information concerning the contest may be found on school bulletin boards or can be obtained from the Gorgas Memorial Institute, Washington, D. C.

MISSISSIPPI VALLEY MEDICAL SOCIETY AWARD

The Mississippi Valley Medical Society offers a cash prize of $100.00, a gold medal and a certificate of award for the best unpublished eassy on a subject of interest and practical value to the general practitioner of medicine. Entrants must be ethical licensed physicians, residents of the United States and graduates of approved medical schools. The winner will be invited to present his contribution before the next annual meeting of the Mississippi Valley Medical Society (September 28, 29, 30, 1938), the Society reserving the exclusive right to publish first the essay in its official publication—the Radiologic Review and Mississippi Valley Medical Journal. All contributions shall not exceed 5000 words, be typewritten in English in manuscript form, submitted in five copies, and must be received not later than May 15, 1938. Further details may be secured from Harold Swanberg, M. D., Secretary, Mississippi Valley Medical Society, 209-224 W. C. U. Building, Quincy, Ill.

EDWARD S. HATCH, M. D.

The many friends of Dr. Edward S. Hatch will hear with sorrow of his death, October 20, 1937, at Touro. He was sixty-two years of age at the time of his death.

Dr. Hatch received his medical training at Harvard and then came to New Orleans to practice his specialty, orthopedic surgery. At one time, he was professor of orthopedics at the Graduate School of Medicine, Tulane University, resigning last June. For more than twenty-five years he was chief of the department of bone and joint surgery at Touro Infirmary; he was chief orthopedist at the Charity Hospital.

WOMEN'S AUXILIARY

Louisiana State Medical Society

President—Mrs. George D. Feldner, New Orleans.

President-Elect—Mrs. Frederick G. Ellis, Shreveport.

First Vice-President—Mrs. Joseph P. Brown, Monroe.

Second Vice-President—Mrs. Walter Moss, Lake Charles.

Third Vice-President—Mrs. Robert Bernhard, New Orleans.

Fourth Vice-President—Mrs. E. A. Campbell, Homer.

Recording Secretary—Mrs. William B. Heidorn, Shreveport.

Corresponding Secretary—Mrs. Aynaud F. Hebert, New Orleans.

Treasurer—Mrs. Cassius L. Peacock, New Orleans.

Parliamentarian—Mrs. John T. Crebbin, Shreveport.

An Executive Committee meeting was held at the home of the President, Mrs. George D. Feldner, on Wednesday, September 29, when routine business was discussed. Mrs. John T. Crebbin of Shreveport, a member of the committee, came to New Orleans to attend.

Each month we are going to try to have an interesting letter from the Parish Medical Society Presidents, expressing their opinion of the Woman's Auxiliary. We are sure our members are going to enjoy them and we thank the doctors for their cooperation. Our first letter is from Dr. James T. Nix, President of the Orleans Parish Medical Society.

LETTER FROM DR. NIX

I am happy to express admiration for the work and the workers of the Woman's Auxiliary to the Louisiana State Medical Society. The multiple activities of your group, simply and efficiently executed, serve as a complement to the high purpose of organized medicine.

In my contacts with your local group, I have seen the Auxiliary in active service. Your New Orleans unit, led by its officers, has collected and donated a substantial fund for the binding of important journals in the library of the Orleans Parish Medical Society; it has spread sound health advice by distributing Hygeia in local schools; it has provided charitable institutions wth drug samples, secured from doctors' offices and from pharmaceutical firms.

The Auxiliary, true to its name, has aided the Orleans Parish Medical Society, through cooperation with Dr. Alton Ochsner, the able Chairman of Longer Life Week, to make that event one of the most outstanding of the year.

All these activities represent only a component

of the aggregate service of the Auxiliary to the Louisiana State Medical Society. Whatever accomplishments the Auxiliaries of other states and other countries might claim, no Auxiliary could do its part more than Louisiana's, none could have a fuller program for the coming year. Sincere wishes for success and deep assurance of our wholehearted support in your anti-tuberculosis and safe-driving campaigns, in your labor for increasing the Indigent Physicians' Fund, in your cooperation with the Women's Field Army of the American Society for the Control of Cancer,—in each of your humanitarian activities. Godspeed in all future endeavors, with sentiments of esteem and kindest regards, may I ever remain, Your humble servant,

Jas. T. Nix, M. D.

ORLEANS PARISH

The opening meeting of the Auxiliary was held on Wednesday, October 3, 1937, at the Orleans Club. The President, Mrs. Jules Myron Davidson, presided.

The membership had the pleasure and privilege of hearing Dr. James T. Nix, President of the Orleans Parish Medical Society, and Dean of the Postgraduate School of Medicine at the Louisiana State Medical Center. His subject was "My Hobby—Scrapbooks." He read quotations of famous poets, and some of his original poems. Dr. Nix also spoke of the Auxiliary and its importance to organized medicine.

Extensive plans for the year's work were outlined and reports of the various standing committees were given. Again the Auxiliary will sponsor an anti-tuberculosis program in the schools and will institute a safe driving campaign.

The Auxiliary is very happy to announce the addition of twenty-three new members to its role and trust this will be an incentive for many more of the wives of the members of the Orleans Parish Medical Society who are not already members to join our ranks.

Mrs. S. M. Blackshear,
Publicity Chairman.

CADDO PARISH

The Woman's Auxiliary to the Shreveport Medical Society met on Wednesday afternoon, October 3, 1937, in the home of Mrs. F. G. Ellis. Mrs. John T. Crebbin and Mrs. R. T. Lucas poured coffee. After the business session there was a delightful musical program by the following: vocal numbers, Mrs. B. C. Garret and Mrs. Elizabeth Goodwin; piano, Mrs. L. L. Davidge, Mrs. J. M. Gorton, Mrs. Rufus Davidson and Miss Ernestine Kinnebrew.

At the business session Mrs. Oxford, Chairman of the Public Relations Committee, announced that there would be a continuation of last year's class in parliamenatry law. The class will be open to all Auxiliary members and will again be conducted by Mrs. C. E. Rew.

It was voted to contribute ten dollars to the Indigent Physicians, fund and five dollars to the Community Chest.

Mrs. John L. Scales,
Publicity Chairman.

TO AMERICA'S SCHOOLS

Your Health—A New Radio Program For Schools

The American Medical Asosciation and the National Broadcasting Company present each week over the Red Network a program of dramatized health messages intended to furnish graphic supplementary material for health teaching in junior and senior high schools. Much of this material is also useful for elementary schools, especially in the higher grades.

The program is broadcast each Wednesday from 2 to 2:30 p. m. Eastern Standard Time, one hour earlier Central Time, two hours earlier Mountain Time and three hours earlier Pacific Time.

The program will be presented in nine groups of four programs each, beginning October 13, 1937, and running consecutively through June 15, 1938.

The general subjects to be presented are: Personal Health; Hygiene; Diet; Contagious Diseases; Diseases of Middle Age; Public Health; Health Education; Mothers and Children; and Using Health Knowledge. See the October issue of Hygeia, the health magazine, for full program and subsequent issues for detail announcements.

Now that the auxiliaries have all started their fall and winter activities we are very anxious to have news items from each Auxiliary. Will you please send me some news for the next issue of the Journal. In case you have forgotten, my address is 1472 Arabella Street, New Orleans.

The committees are all making wonderful plans for the Southern Medical meeting here in New Orleans, November 30 to December 3. Mrs. George Taquino is chairman in charge of the woman's entertainment and a splendid program is promised. We hope to see our auxiliaries well represented.

Mrs. Lucian W. Alexander, Chairman,
Press and Publicity.

BOOK REVIEWS

Synopsis of Gynecology Based on the Textbook, Diseases of Women: By Harry Sturgeon Crossen, M. D., F. A. C. S., and Robert James Crossen, M. D. St. Louis, The C. V. Mosby Company, 1937. pp. 247. Price $3.00.

This little compendium is a synopsis of the larger volume, "Diseases of Women," written by the same authors. It is an excellent synopsis, as synopses go, but suffers for that reason alone; detail and completeness have been sacrificed for the conservation of space.

The senior author in the preface states that "Diseases of Women" is intended as a text for students who propose to practice gynecology and that the shorter synopsis is offered for those students who choose other specialties.

"Diseases of Women" is a standard textbook used in teaching gynecology and, in the reviewer's opinion, is the best single volume text for this purpose because it provides just sufficient detail to afford the medical student a comprehensive understanding of the subject. The synopsis loses the detail and thoroughness which make the larger book valuable. It cannot be considered an adequate text for teaching gynecology even for those students who will practice other specialties. The justification for its existence is certainly questionable.

E. Perry Thomas, M. D.

Electrocardiography: By Chauncey C. Maher, B. S., M. D. Baltimore, William Wood & Co., 1937. pp. 250. Price $4.00

This second edition contains the same number of pages as the first. Much of the first chapter is drawn from, "The Criteria for Classification and Diagnosis of Heart Disease" published by the New York Tuberculosis and Health Association and approved by the American Heart Association.

There is some improvement over the first edition. Some of electrocardiograms in which the interpretations in the first edition are not correct have been corrected. In the new edition he says more about Lead IV., but the description is not sufficient to give the beginner an adequate idea of the subject. In the new edition, he discusses rather briefly the theory of the circus movement as the mechanism involved in auricular flutter and fibrillation. This was not mentioned in the first edition. Mention is also made of the theory of multiple ectopic foci in the auricle giving rise to fibrillation and flutter. He makes use of the new nomenclature in the description of bundle branch block. He has dropped the term "decompensation" and uses in its place "insufficiency" to describe heart failure, which I consider a better term. The text has been rearranged to some slight degree. The diagrams and reproductions are very good. The beginner will find much that is instructive in this book.

J. M. Bamber, M. D.

System of Clinical Medicine: By Thomas Dixon Savill, M. D. (Lond.) Baltimore, William Wood and Co., 1936. 1114 pages. Price $9.00.

This well known book in its tenth edition has maintained its original plan and arrangement.

Each chapter is divided into three parts. The first part deals with the symptoms of a particular disease more or less in detail, plus a brief discussion of other causes which could give origin to the symptomatology described. The second part discusses the physical signs and the various methods used to elicit them. The third "consists of a clinical classification of the various maladies affecting that region, and a summary of the routine procedure to be adopted."

The present edition has been thoroughly revised and new material added to keep pace with the latest advances in medicine. New sections have been written on esophagoscopy, bronchoscopy, special diet régimes, endocrine factors in the menstrual cycle, cerebral angiography and many others.

In keeping with the present trend in medical treatise writing, seventeen specialists collaborated in revising the sections dealing with their particular field of endeavour. The book although not profusely illustrated contains plates, photographs and drawings that have been well chosen to explain the text.

Savill's "System of Clinical Medicine" is not meant for the specialist but is thoroughly suited for the student and busy practitioner, who wish to obtain, in the least amount of time possible, the greatest bulk of information obtainable. It is, therefore, a valuable book to have on the desk.

Alberto Prieto, M. D.

Community Health Organization: Edited by Ira V. Hiscock, M. D., for the Committee on Administrative Practice of the American Public Health Association. Enlarged and revised edition July, 1932; reprinted February, 1935. New York, The Commonwealth Fund. pp. 251. Price $2.50.

The principle of supplying a small comprehensive treatise on a special subject to those particularly interested in it has met with eminent success in the hands of Dr. Hiscock.

The author has contributed far more than a simple outline of administrative procedure in community health work. This small book contains all of the necessary principles and philosophies under-

lying social health agency activities to make every technical method described by the author understandable and interesting.

If I want ready information on the rationale and technics of community health, I shall turn first to this book for I know I will find there the basic assumptions and methods from which I can be lead by references to more exhaustive studies of the subject.

There can be no real adverse criticisms of this book. Dr. Hiscock has excelled in restraint and produced a work worthy of the interests of all concerned with the practice of community health administration and one well worth reading by all who have the slightest academic interest in the subject.

W. H. PERKINS, M. D.

Sickness and Insurance: By Harry Alvin Millis. Chicago, University of Chicago Press, 1937. pp. 166. Price $2.00.

This timely book, which has been written by a layman, appears at a time when the question of socialized medicine is receiving much attention from the medical profession.

The first section of the book is devoted to a discussion of the sickness problem as it now exists in the United States. Professor Millis shows with his figures and statistics that people belonging to the low income group are unable, to a large extent, to meet the financial stress attendant on a serious or prolonged sickness. He discusses present day trends such as group hospitalization and private group clinics.

In the second section, there is a rather exhaustive study of the present status of compulsory health insurance abroad, in which he devotes considerable space to the development and management of this problem in Germany, England, and France. Apparently, each country has a different system in operation, which is developed according to its needs. Existing defects in any system are evidently difficult to correct. The status and quality of medical work in these countries is not discussed in any great detail. His studies appear to be mainly on the physical aspect of the operation of such systems.

The third and most interesting section of the book comprises a study of the compulsory health insurance movement in the United States, along with suggested plans for its development. He recognizes that for any intelligent, workable plan to be put in efficient operation it must be put on a compulsory, rather than a voluntary basis, and should not be left to the competition of various private organizations. All funds raised by compulsory insurance for individuals in the low income class are obtained from three sources; namely, the insured, his employer, and governmental grants. One suggestion (that of Dr. Parran) is that any plan adopted should be limited in its scope to major illnesses, which are the most costly.

HENRY D. OGDEN, M. D.

The Colon As a Health Regulator—From a Surgeons' Point of View: The effects and treatments of its developmental abnormalities: By Sir Henry M. W. Gray. Toronto, The Macmillan Company of Canada, Ltd., 1936. pp. 100 Price $2.50.

This little volume is well printed on good paper and the illustrations are above criticism. It is written in the delightful strain of this well-known surgeon and there is no possibility of mistaking any detail of the procedure he recommends. His advocacy for a "house cleaning" of the abdomen is backed by excellent data from his extensive service. Whether or not his suggestions are suitable for acceptance by less experienced and less enthusiastic operations is a question that must make us pause. In any event, the volume is interesting and well worth while not only to the surgeon but to the internist.

O. W. BETHEA, M. D.

International Clinics, vol. 2, June 1937. Philadelphia. J. B. Lippincott Co., 1937. pp. 315. Price $2.50.

In a publication that is uniformly good, one is only required to call the attention of his readers to the fact that the present volume merits their consideration. Puerperal Infection; The Eye in Diagnosis; Biliary Surgery in 1936; The Clinical Significance of Abdominal Pain, are only a few of the many excellent articles to be found in this book.

I. L. ROBBINS, M. D.

Genealogy of Sex: By Curt Thesing, M. D., New York, Emerson. 1934. pp. 286. Price $2.95.

Sex in its myriad manifestations, in its charming and enthralling evolution, unfolds itself to the reader of this entrancing story of the genealogy of sex in a manner calculated to excite one's admiration, at the profound erudition of the eminent author and the ingenious inventions of the innumerable forms of life bent upon the propagation and persistence of their kind, in contact with a variable environment both kind and favorable, or harsh and injurious.

The alluring story of the love life of these animals from the simple unicellular to the complex multicellular, is one so replete with facts that are curious and uncanny that repeatedly one is reminded of the adage that truth is surely stranger than fiction.

The love habits and mating of life, ranging from eel to the elephant and from the minnow to man, are told with the skill and precision of a great scientist and the art of a true story-teller.

The illustrations are excellent; they reveal in a way far superior to words, the way of a male and a female. The index is satisfactory and enhances the value of the book.

I. L. Robbins, M. D.

Aids to Physiology: By Henry Dryere. Baltimore, Wm. Wood & Company, 1937. 295 pp. Price $1.25.

This small volume belongs to the "Students' Aid Series" published in Great Britain and is designed "to assist the student in collecting and summarizing the information derived from the larger textbooks and lecture notes". The style is concise and logical and the subject matter of the first edition has been rewritten and brought up to date. A chapter on reproduction has also been added.

It is unfortunate, however, that further revision and additions were not made. There has been a growing tendency to teach physiology from the point of view of its applications to medicine. This is reflected in the character of the more recently published textbooks. Many subjects now included in modern courses and texts are entirely omitted or inadequately treated in the Aid. Amongst these are the anemias, venous and capillary pressures, cardiac valvular abnormalities, periodic breathing, conditioned reflexes and referred pain. It would seem, therefore that the Aid would have only limited value to the average student at the present time.

H. S. Mayerson, Ph. D.

Pathology: By E. B. Krumbhaar, M. D. New York, Paul B. Hoeber, 1937. pp. 206. Price $2.00.

The aim of this little volume is to give in a concise and readable form a special phase of the history of medicine, namely, pathology. The author has treated the trends in pathology rather than the chronological sequence and this makes the primer quite interesting. Most valuable is a chronological list of the important events in the progress of this specialty with the attempt to give "first descriptions". The book is well written, clear and instructive.

Joseph Ziskind, M. D.

Manual of the Diseases of the Eye: By Charles H. May, M. D. Baltimore, William Wood, 1937. pp. 498. Price $4.00.

During the past decade I have reviewed several editions of this little classic, which has been read by more people than any other ophthalmic textbook ever written. The reason is that it contains only the important and the interesting, and expressed in the fewest words.

The fifteenth edition is practically the same size as the last edition and has a similar arrangement. Some of the illustrations have been modernized, and a few new ideas including gonioscopy, have been added.

Copper sulphate, yellow oxide of mercury and other older remedies are rather generously recommended, while newer remedies are recommended less than their merits apparently warrant. The classification, especially of corneal diseases, is becoming obsolete. The very brief table of contents could be expanded to advantage; this would greatly increase the accessibility of the subject matter. The actual technic of refraction should be described at greater length.

Those who want a condensed book on diseases of the eye will make no mistake in reading, and then reading again, this little classic which is without a peer.

Charles A. Bahn, M. D.

Emotional Adjustment in Marriage: By LeMon Clark, M. S., M. D. St. Louis, C. V. Mosby Co., 1937. pp. 261. Price $3.00.

This is an interesting book on a very vital subject. The author's aims are: 1. To increase the sum total of human happiness by seeking to contribute further truths upon which a satisfactory adjustment of the sex side of marriage may be based. 2. To educate the parent to educate the child concerning sex matters. He points out that, in the past, prudery, prejudice, and superstition have so dominated our attitude towards sex that it has been impossible to approach it closely enough to see it clearly.

The book contains no highly scientific terms and is readily understood by the student as well as by the teacher. It is highly valuable to the physician who is confronted with patients seeking advice on sex matters.

Harry Meyer, M. D.

Adaptation in Pathological Processes: By William H. Welch, M. D., LL. D. Baltimore, Johns Hopkins Press, 1937. pp. 58. Price $1.50.

"Adaptation In Pathological Processes" is the title of an address delivered 40 years ago by Dr. William H. Welch. That it should be reprinted today in the admirable publications of the Johns Hopkins Press is due principally to the remarkable applicability of the principles enunciated by the author to the same biologic problem today. This is the manifest reason; but, in addition, it is due to a curiosity and interest which the subject never fails to evoke among scientific and medical men. The oration was delivered by Dr. Welch in 1897 before the Congress of American Physicians

and Surgeons. The subject expounded is one which, in the author's own words, "possesses the broadest biological, as well as medical, interest". It is concerned chiefly with the description and explanation of those "morbid processes which bring about some sort of adjustment to changed conditions due to injury or disease". This is the central theme, and the reader soon becomes aware that the author is possessed of a profound insight into the subtleties and wonders of this phase of medical science.

Accurate information of the subject discussed so brilliantly by Dr. Welch was made possible as early as 1615-16 by Harvey's work and lectures on the circulation of the blood, but precise knowledge was not obtained until the past century. During the lifetime of Dr. Welch (1850-1934), vast amounts of material on the subject were accumulated, a large part of which was due to Dr. Welch's endeavors.

The essay carries a splendid introduction by Dr. Simon Flexner, who was retired as director from the Rockefeller Institute for Medical Research in 1935. Dr. Flexner clearly points out the biologic qualities in which the knowledge of the day was especially scant at the time of the delivery of the address, and remarks upon the astonishingly few amendments and additions which are necessary to make the essay applicable to current conceptions. And he adds, too, in a truthful and gracious manner, that the doctrine is far more defensible today than it was 40 years ago.

The introduction is enthusiastic as concerns the biologic and medical qualities of the essay, but is neglectful of the historical interest. For those all-too-few students of medicine who are engaged in, or sympathetic with, the perusal and preservation of medical classics, this neat, thin publication will be cheerfully and promptly received.

ROBERT S. MUNGER, M. D.

Clinical Allergy: By Louis Tuft, M. D. Philadelphia, W. B. Saunders Co., 1937. pp. 711. Price, $8.00.

This is an up to date book, well adapted both for student and teacher of allergy. Besides reviewing thoroughly the data already accepted and published, the author adds original research views throughout the book.

The chapter on physical allergy, however, could be improved and the extensive quotations abbreviated; the chapter on pollens could be illustrated in the manner of Scheppegrell or Woodhouse's book. Survey maps as in Durham's book would be a valuable addition. Cannon's theory on the autonomic neuro-effector system should find due consideration in a subsequent edition.

The main feature which recommends the book is the arrangement of the whole allergic problem into chapters dealing with one form of allergy at a time and ending with a resumé at the end of each. The whole matter is offered the reader in an interesting and instructive form. A valuable book to have on hand for instant reference.

NARCISSE F. THIBERGE, M. D.

PUBLICATIONS RECEIVED

P. Blakiston's Son and Company, Philadelphia: Manual of Human Dissection by Edwin M. Shearer, Ph. D.

Chicago Medical Press, Chicago: The Pneumonokonioses (Silicosis) Literature and Laws, Book III, by George G. Davis, M. D., Ella M. Salmonsen, and Joseph L. Earlywine.

Paul B. Hoeber, Inc., New York City: The Thinking Body by Mabel Elsworth Todd. Physical Therapy in Arthritis by Frank Hammond Krusen, M. D.

Lea and Febiger, Philadelphia: External Diseases of the Eye by Donald T. Atkinson, M. D., F. A. C. S. Biological and Clinical Chemistry by Matthew Steel, Ph. D.

Medical Authors' Publishing Company, New York City: Functional Activities of the Pancreas and Liver by Charles W. McClure, M. D.

C. V. Mosby Company, St. Louis: Synopsis of Genito-urinary Diseases by Austin I. Dodson, M. D., F. A. C. S. Crippled Children and Orthopedic Nursing by Earl D. McBride, B. S., M. D., F. A. C. S., in collaboration with Winifred R. Sink, A. B., R. N. Methods of Treatment by Logan Clendening, M. D. The Management of Fractures, Dislocations, and Sprains by John Albert Key, B. S., M. D., and H. Earle Conwell, M. D., F. A. C. S.

Oxford University Press, New York City: The Management of the Pneumonias by Jesse G. M. Bullowa, B. A., M. D.

The Rockefeller Foundation, New York City: Annual Report of the International Health Division, 1936.

W. B. Saunders Company, Philadelphia: A Textbook of Medicine by American Authors, edited by Russell L. Cecil, A. B., M. D., Sc. D., with Foster Kennedy, M. D., F. R. S. E., as Associate Editor for Diseases of the Nervous System. The Business Side of Medical Practice by Theodore Wiprud. Materia Medica, Pharmacology, Therapeutics and Prescription Writing by Walter Arthur Bastedo, Ph. M., M. D., Sc. D., F. A. C. P.

Charles C. Thomas, Springfield, Illinois: The Roentgenologist in Court by Samuel Wright Donaldson, A. B., M. D., F. A. C. R.